THE IRON AGE

Published every Thursday Morning by David Williams Co., 14-16 Park Place, New York

Vol. 80: No. 23 *New York, Thursday, December 5, 1907*

$5.00 a Year, including Postage
Single Copies, 15 Cents

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See page 65

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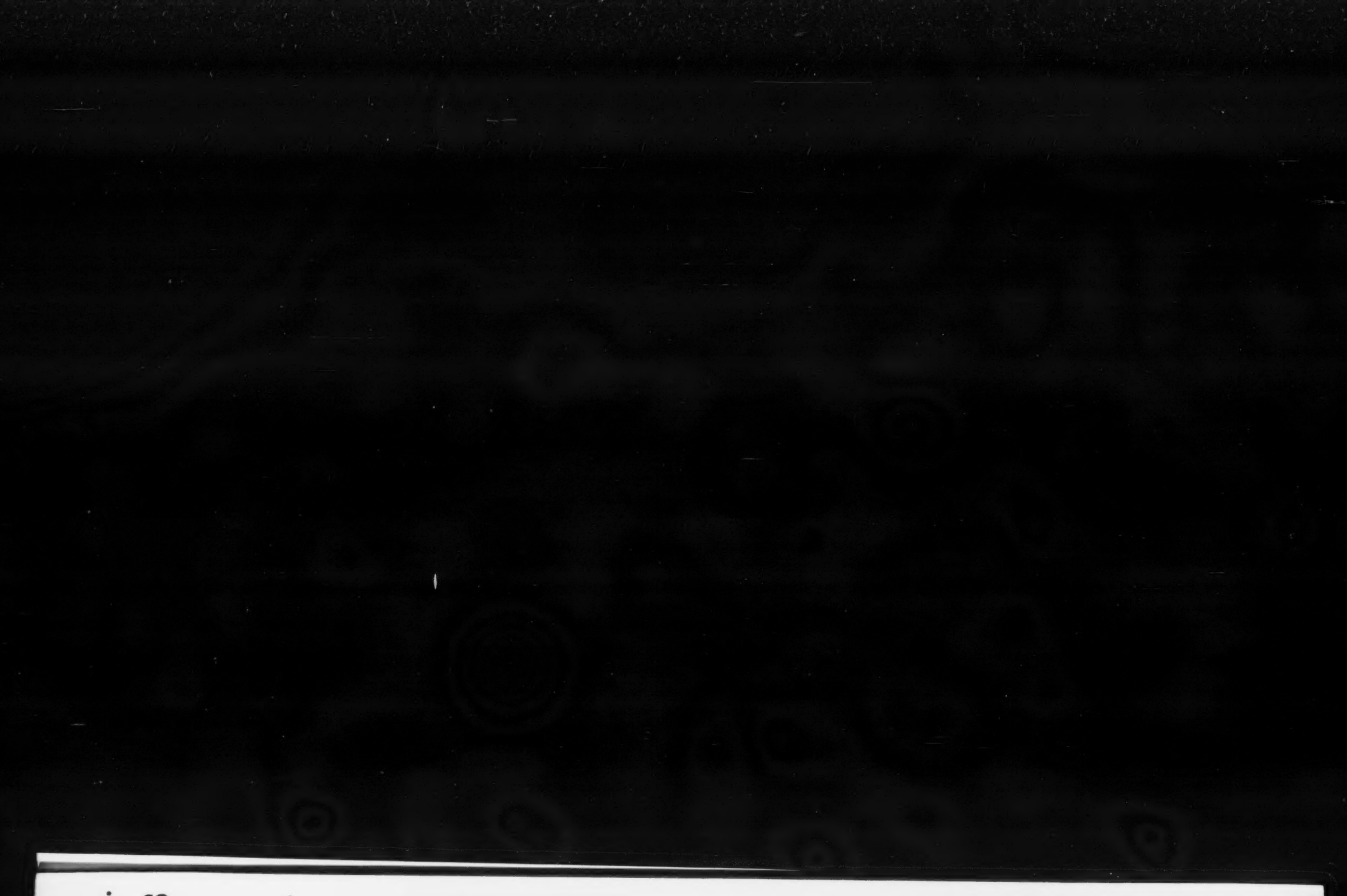

THE IRON AGE

New York, Thursday, December 5, 1907.

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The Witkowitz Company, Moravia, Austria-Hungary.

BY G. B. WATERHOUSE.

The iron and steel works of the Witkowitz Company are situated in Moravia, and may be reached in about four hours from Vienna. They are a model of Continental enterprise, and a visit through them was thoroughly appreciated by many of the members of the Iron and Steel Institute who attended the recent meeting at Vienna.

History of the Company.

The history of this large company is full of interest. It is briefly outlined in the following paragraphs, which abundantly show the progressive spirit of the management.

At the present time the company's property not only comprises the works in Witkowitz but also two ore mines in upper Hungary, hematite and magnetite mines in Moravia, bog iron ore mines in Galicia, and magnetite mines in northern Sweden. The collieries and coke plants are under a separate administration.

The plant was founded in 1829 by the Archduke Rudolf, and in the same year the first puddling furnaces in Austria, worked by English labor, were introduced. Two years later the first coke blast furnace in Austria was blown in. The first rails made in the country and the first car wheels with welded tires were produced in 1837.

In 1843 the works, coal and ore mines were acquired by the famous banking firm of Rothschild. Under that ownership the Anselm Works were built and the railroad was completed to the coal mines. In 1865 the Bessemer process was introduced, and in 1871 the first coke blast furnace of large dimensions was erected. In 1873 Rothschild disposed of the plant to the Witkowitz Company and the brothers Guttman. The new proprietors actively continued the progressive policy. In 1876 the rolling mill was altered and its capacity increased. The blast furnace department was brought up to date in 1878 by the erection of the first brick hot blast stoves in Austria.

The year 1879 was distinctly eventful, for not only was an open hearth plant put down but the first European basic Bessemer steel was blown. The metal was desiliconized in an acid converter and then transferred to a basic one.

In 1880 rod and plate mills were purchased, as also ore mines, which now employ over 1000 men. Works for the production of wrought iron tubes and fittings were opened in 1883 and a new bridge building plant was put down. In 1884 a new Bessemer plant was built, and in 1885 the first by-product ovens, Otto-Hoffmann, were installed.

During the next five years a steel foundry for large castings was erected in New Witkowitz, new boiler works were built, and a third large blast furnace was blown in at the Sofien plant. Five 20-ton open hearth furnaces were placed near the Bessemer plant, and the duplex or combined process was introduced. In 1893 the manufacture of armor plate was taken up. The year 1895 was a period of rapid extension. A third blast furnace was erected at Witkowitz and a three-high mill built; the ore mines of Kottenbach were purchased, and coal mines comprising ten shafts and two coke plants. Each year saw either the extension or purchase of additional properties. A central electric power station was built in 1897, and the Swedish mines were bought. A fourth blast furnace had been built at Sofien in 1900, and in 1902 the fourth at Witkowitz was erected. In this year also the rolling mill was enlarged, and the power station was further equipped with a new 1000-kw. generator. This was soon found inadequate, and in 1904 a second central power station was built, driven by coke oven gas engines.

The two last years, 1905 and 1906, have also witnessed great improvements. Two new batteries of coke ovens have been built. Blast furnace No. 5 has been added at

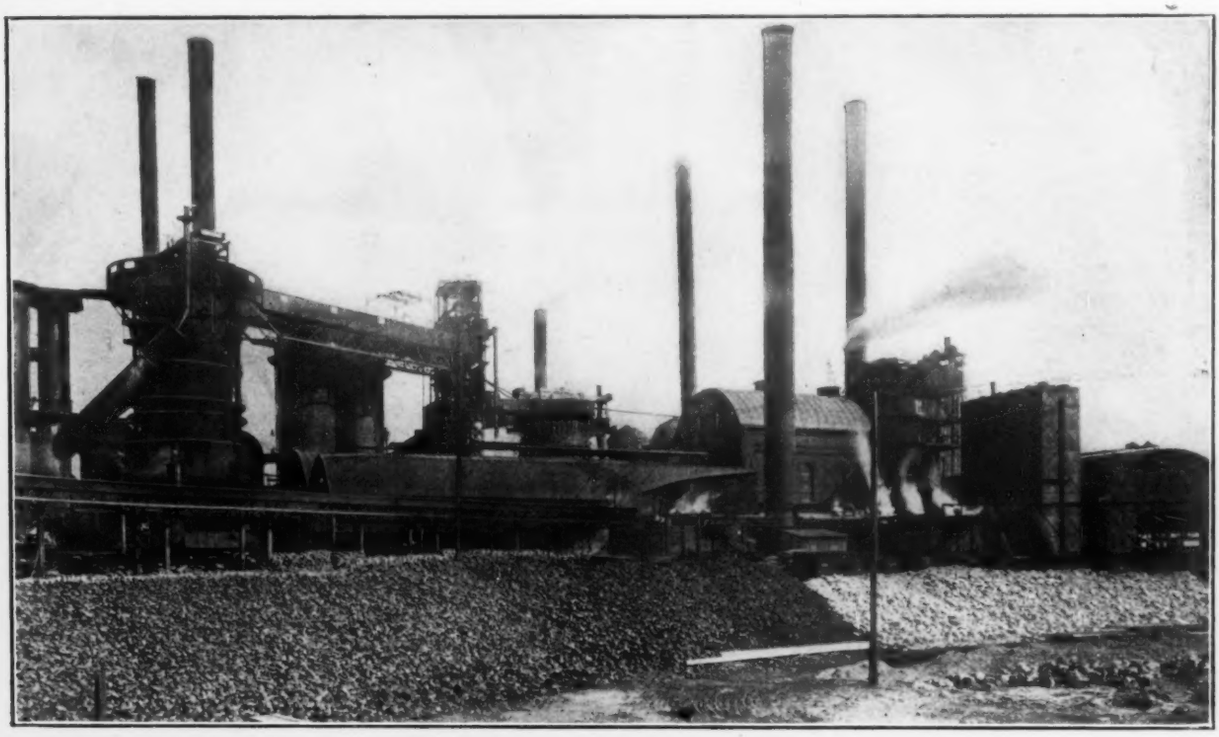


Fig. 1.—The Sofienhuette (Sophia Iron Works) of the Witkowitz Company.

Witkowitz, and large gas engines using both blast furnace and coke oven gas have been erected and installed. In connection with the cast steel works finishing workshops have been erected, a 4000-ton press has been built, and in addition the engine works, bridge shops, boiler shops and foundry have been rebuilt.

Description of the Works.

The works cover 1250 acres. The blast furnaces are situated at Witkowitz and at the Sofienhuette. A view of a portion of the latter plant is given in Fig. 1. There are seven furnaces altogether, with 30 hot blast stoves. The blast is supplied by eight steam engines and three large gas engines. The two largest furnaces are each 82 ft. high, 15 ft. in diameter at the throat and the hearth, and 21½ ft. at the bosh. The blast is admitted through 14 7-in. tuyeres. The furnaces each produce about 400 metric tons per 24 hr., and are capable of making 450 tons. The ores used include spathic iron ore and brown ironstone from upper Hungary, Swedish magnetite, lixiviated copper pyrites and manganese ore from Bosnia, Hungary, and other countries. The fuel is obtained from the Witkowitz collieries and coke plants in the Ostrau Karwin District, though there are Otto ovens at Witkowitz giving coke, ammonia, benzole, tar and gas.

Pig iron is made for puddling and steel making by the Bessemer and open hearth processes. Ferromanganese, ferrosilicon and silicospiegel are also produced.

The puddling works include four single and eight double puddling furnaces, together with four rotating coal fired and five rotating gas fired furnaces. There are six steam hammers and two bloom rolling trains.

The open hearth steel works comprise two establishments. In the oldest the duplex process is in use. There are five 20-ton basic furnaces working in conjunction with two acid lined converters of about 11 tons capacity. Bottom casting is used, and each furnace turns out nine heats per day. The other plant consists of two furnaces of 22 and 33 tons capacity, respectively.

In the steel foundry, shown in Fig. 2, there are five more basic furnaces with a capacity of from 13 to 20 tons. This foundry, with its forge and finishing shops, covers a great deal of ground. In addition to the foundry proper there are a hammer and press department, tire rolling mills and shops for shaping, annealing, hardening and finishing armor plate. There are also extensive machine shops fitted with many large and modern tools.

The products of these works are steel castings, large forgings for engine construction and shipbuilding, axles, tires, cast or forged locomotive and wagon wheels, projectiles and armor plate for the navy and for fortifications. One of the large hydraulic presses is shown in Fig. 3.

The rolling mills are housed in two separate buildings. In the first one are five trains of rolls making merchant iron, skelp, small rails and small sections from both wrought iron and mild steel. Reheating is carried out in ten revolving gas fired reverberatory furnaces. A view of part of this building is given in Fig. 4. The other building is equipped for the manufacture of ship, boiler and tank plate, rails, beams and other structural shapes, wire rods, railroad ties and armor plate. There are altogether eight trains of rolls. In order to turn the partially rolled armor plate over a part of the table with the plate on, it rises bodily and deposits the plate on a corresponding part of the table that has risen to meet it. With the exception of a universal plate mill, all the trains are three-high. In an addition to this building are placed the finishing shops, with hot and cold saws, shears and straightening presses. Then comes the roll shop with 23 lathes.

Fig. 2.—The Steel Foundry of the Witkowitz Company.

The interior of one of the iron foundries is shown in Fig. 5. It is equipped with eight cupolas, two air furnaces and the necessary overhead and jib cranes to handle the work. The engineering branch of the works turns out machinery for the company and for the mines in the neighborhood. This gives the foundry some large work in engine castings and flywheels. It also casts large chill and other rolls. Cast iron pipe is made for both gas and water mains up to 59 in. in diameter. The larger pipes are made in a separate foundry. The gas for the reverberatory furnaces is furnished by Kerpely producers, which have automatic feed and automatic discharge of the ashes.

The engineering department has equipped complete rolling mill plants and builds hoisting engines, pumping plants and mine fans. It also constructs blast furnace blowing engines and compressors of various systems. This department contains a capacious modern bridge shop, supplying bridges and construction work of every type. In the boiler shops boilers of every kind are made, as well as tanks for water, petroleum, &c., up to the largest sizes required.

The tube mill, situated in the older part of the works, is very interesting. It makes butt and lap welded tube and seamless tube by a modified Mannesmann process. For very large tubes and pipes a water gas welding plant is used. Electric welding is employed in making thin sheet metal articles, such as barrels for petroleum and benzine.

Electricity is used a great deal throughout the plant. The central power station is equipped with four direct current generators with a normal capacity of 2450 kw., driven by gas engines. The second power station, driven by coke oven gas engines, has two direct current generators of 820 kw., and two more are being installed, each of 1000 kw.

The plant further includes a brick works, which turns out annually about 6,000,000 ordinary bricks. It also produces all kinds of firebrick, comprising complete blast furnace linings and brick for hot blast stoves, coke ovens, open hearth furnaces and the other furnaces of the establishment.

Mention must be made of the well equipped chemical and physical laboratories. They have five tensile testing machines, giving breaking loads of from 10 to 80 tons, and machines for bend tests, drop tests, compression and hardness.

Some idea of the size of the plant may be gained from the railroad facilities. Communication between the different departments of the works and the State rail-

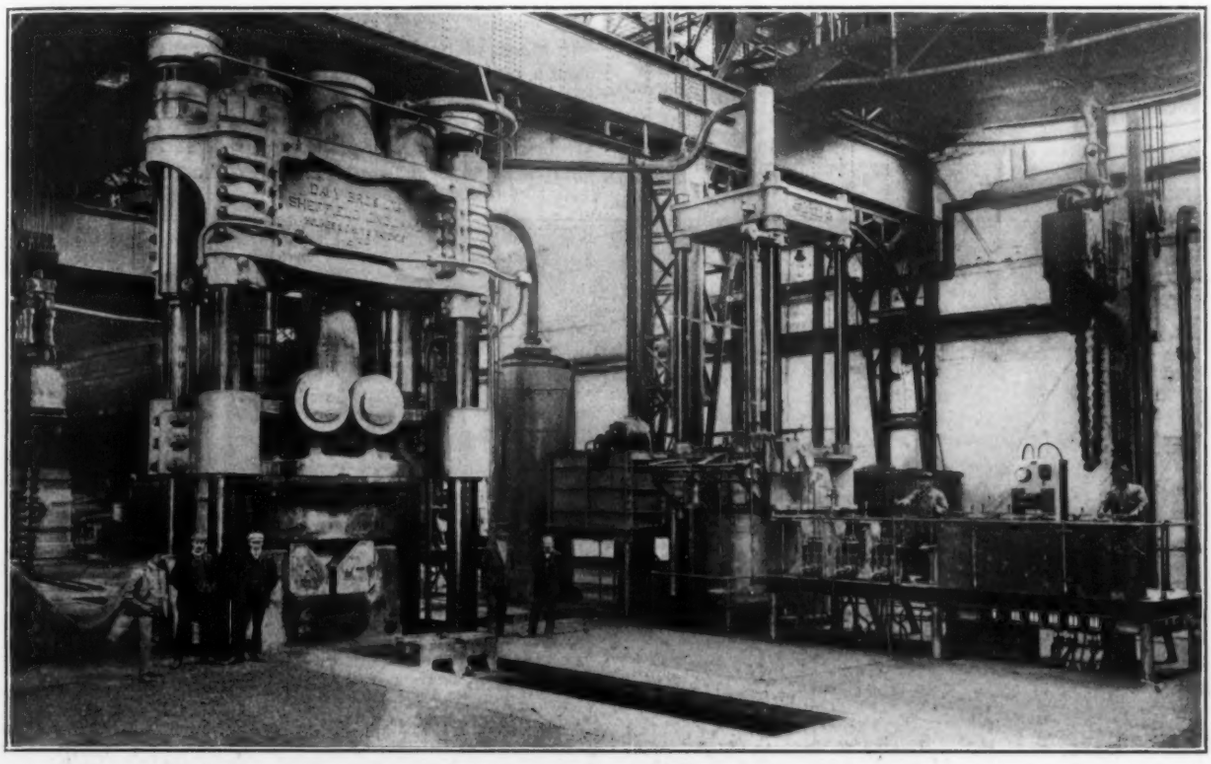


Fig. 3.—A 4500-Ton Hydraulic Press in the Works of the Witkowitz Company.

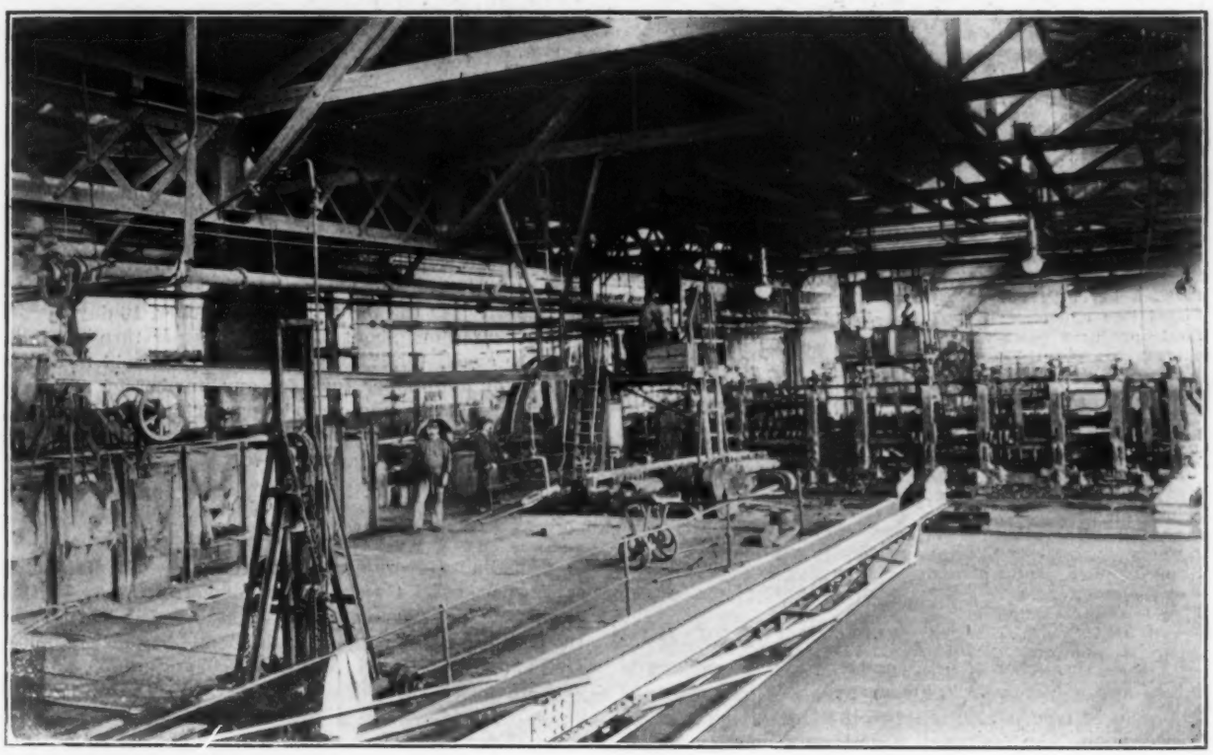


Fig. 4.—One of the Merchant Mills of the Witkowitz Company.

roads is maintained by 55 miles of track, on which the company uses 17 standard gauge engines. There are, in addition, 37 miles of narrow gauge track.

The scope of the plant is well shown by the following tables of annual production. The first gives in metric tons the production from the collieries and coke plants in the Ostrau-Karwin District:

	1903.	1904.	1905.	1906.
Coal output	1,593,302	1,673,509	1,815,844	2,063,000
Coke production:				
Mines	296,708	376,540	385,275	507,800
Works	175,566	176,764	191,274	208,000
Total coke production	472,275	553,304	576,550	715,800

Fig. 5.—View in One of the Iron Foundries of the Witkowitz Company.

In the second table the production of the Witkowitz plant for the past four years is given in metric tons:

	1902.	1903.	1904.	1905.	1906.
Pig iron and iron alloys	256,940	244,363	280,597	318,088	326,906
Steel ingots	154,737	147,343	179,110	207,284	209,937
Puddled bar	42,264	32,372	32,152	37,456	40,109
Rolled iron and steel	134,807	126,951	147,724	179,635	184,163
Steel products, castings,, axles, tires, forgings, armor plate, including own use	16,468	12,518	17,589	17,541	25,817
Rolled and drawn wrought iron tubes and fittings	11,609	12,983	15,450	16,150	18,959
Iron castings, including own use	15,913	20,416	23,325	22,283	27,443
Output of engine works	14,978	10,636	12,275	20,594	21,516
Bridge, boiler works and forges	7,657	7,907	10,359	12,456	12,867
Fire bricks, including own use	27,042	19,010	33,581	40,505	42,847

The total number of men employed by the company in mines and works was 26,498 in 1906. It has set aside 242 acres of land, which is let to the men at low rentals. The company also maintains a children's home, a supply association, several baths, a steam laundry, stores, five soup kitchens and a hotel. The baths for the use of the staff are splendidly fitted up. The general hospital for the works has 15 wards and 130 beds. There is a sick fund, and all the workmen belong to the Government Accident Insurance Association. The expense of both these institutions is borne by the company.

A McKeesport Tin Plate Record.

The McKeesport Tin Plate Company, McKeesport, Pa., made the largest output from October 16 to October 31 in its history. The plant contains 10 hot mills, and the output for the period noted was 1743½ gross tons of black plates. The output for the tin house for the same period was 28399 base boxes. The output for the entire month of October was 2999 gross tons of black plates and 54,099 base boxes of tin plate. These are not record figures for a month, however. The output of black plates in October would have been much larger were it not that three days were lost in the first half of the month owing to the bar shear breaking down. This plant produced in January last 3103 gross tons of black plates, which is a record month. Without this loss the month of October would probably have shown a total of between 3300 and 3400 tons of black plates. The record output of black plates for the second half of October, 16 days, or 38 turns, figured out about 4.6 gross tons per turn per mill, or to be exact, 10,277 lb. per turn. This is said to be the record for output per turn for any number of mills approaching 10, for any period approaching 16 days, and on material such as was worked in this case, averaging 100 lb. basis. The plant is operated nonunion, the McKeesport Tin Plate Company having broken away from the Amalgamated Association several years ago.

Canadian Government statistics show the following emigration from Great Britain and Ireland to British North America for comparative years ended August 31: In 1898 there were 26,161; in 1899, 32,753; in 1900, 47,173; in 1901, 43,021; in 1902, 58,994; in 1903, 99,089; in 1904, 90,964; in 1905, 107,501; in 1906, 132,917, and in 1907, 177,149.

The Mesta Machine Company, Pittsburgh, builder of Corliss and piston valve engines, rolling mill machinery and machine molded gears, has made a shipment of a 10,000-hp. 50 x 66 in. two-cylinder simple reversing blooming mill engine to the Inland Steel Company, Indiana Harbor, Ind. The finished weight of the engine was 815,000 lb.

The Atlas Scale Charging Car.

A new type of scale charging car, intended principally for use around smelting works and furnaces, is shown in the illustration as built by the Atlas Car & Mfg. Company, Cleveland, Ohio. The car is propelled either manually or by a small locomotive, is arranged to dump to either side of the track, and can be made for from 30 to 150 cu. ft. capacity. The body being practically balanced and held in position by two bales, one at each end of the body, is adapted to be manipulated by one man, and the center of gravity being low, easy riding is insured.

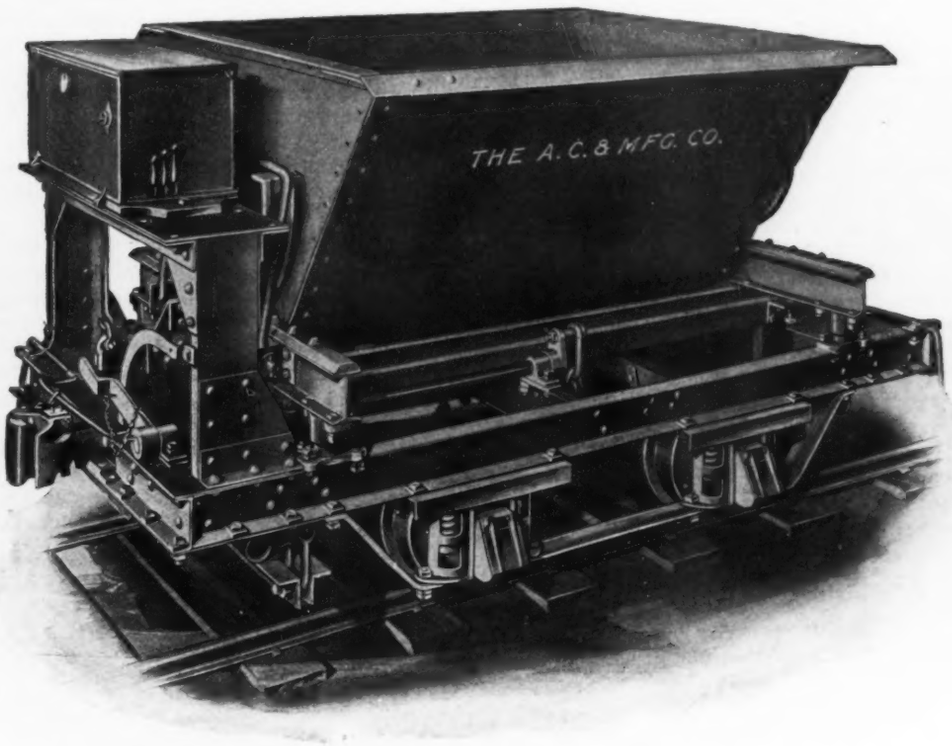
The hopper is made of steel plates, reinforced around the edge and on the ends, and is supported by malleable iron rockers. The rocker ways are beveled, so that no material can lodge upon them to prevent operating the hopper. A subframe made of structural material and well braced is provided, to which the rocker ways are connected. Considerable of the end thrust is taken up in the center as well as on the ends. Cross frame supports are provided and a check chain to hold the hopper from tipping too far.

The main frame is provided with four cone shaped steel castings which fit into corresponding female castings secured to the subframe. When the car is in motion it is intended that the subframe shall set on the cone supports. This holds the mechanism always in true alignment when the scales are out of action. The relieving device is a new feature, taking the entire scale off the pivots and knife edge while the car is in motion. When material is to be weighed the movement of the lever shown on the platform brings the scale into action through the medium of a link connected to the main lever. This removes friction, wear and strain from the knife joints, adding to the life of the scales and accuracy in weighing.

The scale box shown in the engraving is known as the Miller type of beam box, having the beams parallel with each other instead of vertical, as in certain other types. On the ends of the box are shown three triggers, which are used when material is to be weighed. The beams are brought into action by lowering the trigger to be used, each trigger representing a beam. The tare beam is not indicated. As many as seven different materials for charging may be weighed on these cars by providing the requisite number of beams. An indicator is provided on the outside of the box, showing the action of the beams, to guide the operator in adding the right amount of material to the hopper. The box itself is provided with a Yale lock to prevent tampering with the scale beams. All wearing parts of the scales have means of adjustment.

The main car frame is composed of heavy I beams, which are well trussed and braced with intermediate channels and plates to preserve their alignment. End thrust on the body and scale mechanism is well taken care of, as the shunting around of such cars is excessive. The wheels and axles are heavier than usual, and the boxes and pedestals are of malleable iron, with duplex springs, bronze bearings and ample space for oil waste. The duplex springs reduce the jar on the scale mechanism and add to the life of the car in general.

Owing to the fact that small curves are necessary to the economical handling of such cars around smelters and furnaces, an automatic radial drawbar is designed, so that these cars can be handled in trains without side friction or binding. Cars can be coupled on a curve or in any position, or uncoupled through the uncoupling lever, when the operator is standing on the outside of the car, thereby facilitating the handling of such cars.



A New Weighing and Charging Car Built by the Atlas Car & Mfg. Company, Cleveland, Ohio.

The Atlas Car & Mfg. Company designs cars of all classes for smelters and mines, this being one of the latest. A number of other types of small cars are built, and other scale cars up to 50 tons capacity. The company's shops are especially adapted for producing duplicate work of this sort to the best advantage.

The Allis-Chalmers Company, Milwaukee, Wis., has received a contract for the complete equipment of one of the largest flourmills to be erected in Japan. The capacity of the mill will be 800 bbl. of flour per day, and the equipment furnished comprises 10 carloads of machinery, containing 20 double Allis roller mills, six universal bolters, six centrifugal reels, six Reliance purifiers and the usual complement of auxiliary and transmitting machinery.

The Grand Trunk Railway Company of Canada has placed orders for 90 locomotives. All will be made in Canada except 10 switch engines and 10 10-wheel passenger locomotives, to be turned out by the Baldwin Locomotive Works.

roads is maintained by 55 miles of track, on which the company uses 17 standard gauge engines. There are, in addition, 37 miles of narrow gauge track.

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Fig. 5.—View in One of the Iron Foundries of the Witkowitz Company.

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The total number of men employed by the company in mines and works was 26,498 in 1906. It has set aside 242 acres of land, which is let to the men at low rentals. The company also maintains a children's home, a supply association, several baths, a steam laundry, stores, five soup kitchens and a hotel. The baths for the use of the staff are splendidly fitted up. The general hospital for the works has 15 wards and 130 beds. There is a sick fund, and all the workmen belong to the Government Accident Insurance Association. The expense of both these institutions is borne by the company.

A McKeesport Tin Plate Record.

The McKeesport Tin Plate Company, McKeesport, Pa., made the largest output from October 16 to October 31 in its history. The plant contains 10 hot mills, and the output for the period noted was 1743½ gross tons of black plates. The output for the tin house for the same period was 28399 base boxes. The output for the entire month of October was 2999 gross tons of black plates and 54,099 base boxes of tin plate. These are not record figures for a month, however. The output of black plates in October would have been much larger were it not that three days were lost in the first half of the month owing to the bar shear breaking down. This plant produced in January last 3103 gross tons of black plates, which is a record month. Without this loss the month of October would probably have shown a total of between 3300 and 3400 tons of black plates. The record output of black plates for the second half of October, 16 days, or 38 turns, figured out about 4.6 gross tons per turn per mill, or to be exact, 10,277 lb. per turn. This is said to be the record for output per turn for any number of mills approaching 10, for any period approaching 16 days, and on material such as was worked in this case, averaging 100 lb. basis. The plant is operated nonunion, the McKeesport Tin Plate Company having broken away from the Amalgamated Association several years ago.

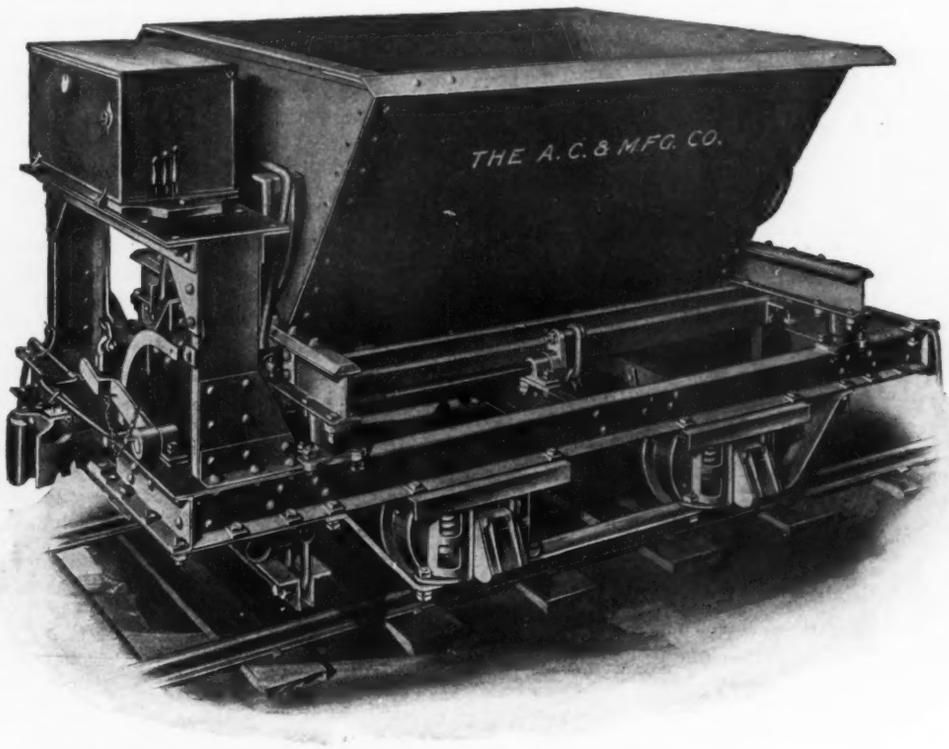
Canadian Government statistics show the following emigration from Great Britain and Ireland to British North America for comparative years ended August 31: In 1898 there were 26,161; in 1899, 32,753; in 1900, 47,173; in 1901, 43,021; in 1902, 58,994; in 1903, 99,089; in 1904, 90,964; in 1905, 107,501; in 1906, 132,917, and in 1907, 177,149.

The Mesta Machine Company, Pittsburgh, builder of Corliss and piston valve engines, rolling mill machinery and machine molded gears, has made a shipment of a 10,000-hp. 50 x 66 in. two-cylinder simple reversing blooming mill engine to the Inland Steel Company, Indiana Harbor, Ind. The finished weight of the engine was 815,000 lb.

The Atlas Scale Charging Car.

A new type of scale charging car, intended principally for use around smelting works and furnaces, is shown in the illustration as built by the Atlas Car & Mfg. Company, Cleveland, Ohio. The car is propelled either manually or by a small locomotive, is arranged to dump to either side of the track, and can be made for from 30 to 150 cu. ft. capacity. The body being practically balanced and held in position by two bales, one at each end of the body, is adapted to be manipulated by one man, and the center of gravity being low, easy riding is insured.

The hopper is made of steel plates, reinforced around the edge and on the ends, and is supported by malleable iron rockers. The rocker ways are beveled, so that no material can lodge upon them to prevent operating the hopper. A subframe made of structural material and well braced is provided, to which the rocker ways are connected. Considerable of the end thrust is taken up in the center as well as on the ends. Cross frame supports



A New Weighing and Charging Car Built by the Atlas Car & Mfg. Company, Cleveland, Ohio.

are provided and a check chain to hold the hopper from tipping too far.

The main frame is provided with four cone shaped steel castings which fit into corresponding female castings secured to the subframe. When the car is in motion it is intended that the subframe shall set on the cone supports. This holds the mechanism always in true alignment when the scales are out of action. The relieving device is a new feature, taking the entire scale off the pivots and knife edge while the car is in motion. When material is to be weighed the movement of the lever shown on the platform brings the scale into action through the medium of a link connected to the main lever. This removes friction, wear and strain from the knife joints, adding to the life of the scales and accuracy in weighing.

The scale box shown in the engraving is known as the Miller type of beam box, having the beams parallel with each other instead of vertical, as in certain other types. On the ends of the box are shown three triggers, which are used when material is to be weighed. The beams are brought into action by lowering the trigger to be used, each trigger representing a beam. The tare beam is not indicated. As many as seven different materials for charging may be weighed on these cars by providing the requisite number of beams. An indicator is provided on the outside of the box, showing the action of the beams, to guide the operator in adding the right amount of material to the hopper. The box itself is provided with a Yale lock to prevent tampering with the scale beams. All wearing parts of the scales have means of adjustment.

The main car frame is composed of heavy I beams, which are well trussed and braced with intermediate channels and plates to preserve their alignment. End thrust on the body and scale mechanism is well taken care of, as the shunting around of such cars is excessive. The wheels and axles are heavier than usual, and the boxes and pedestals are of malleable iron, with duplex springs, bronze bearings and ample space for oil waste. The duplex springs reduce the jar on the scale mechanism and add to the life of the car in general.

Owing to the fact that small curves are necessary to the economical handling of such cars around smelters and furnaces, an automatic radial drawbar is designed, so that these cars can be handled in trains without side friction or binding. Cars can be coupled on a curve or in any position, or uncoupled through the uncoupling lever, when the operator is standing on the outside of the car, thereby facilitating the handling of such cars.

The Atlas Car & Mfg. Company designs cars of all classes for smelters and mines, this being one of the latest. A number of other types of small cars are built, and other scale cars up to 50 tons capacity. The company's shops are especially adapted for producing duplicate work of this sort to the best advantage.

The Allis-Chalmers Company, Milwaukee, Wis., has received a contract for the complete equipment of one of the largest flourmills to be erected in Japan. The capacity of the mill will be 800 bbl. of flour per day, and the equipment furnished comprises 10 carloads of machinery, containing 20 double Allis roller mills, six universal bolters, six centrifugal reels, six Reliance purifiers and the usual complement of auxiliary and transmitting machinery.

The Grand Trunk Railway Company of Canada has placed orders for 90 locomotives. All will be made in Canada except 10 switch engines and 10 10-wheel passenger locomotives, to be turned out by the Baldwin Locomotive Works.

Platinum Production in 1906.

WASHINGTON, November 30, 1907.—The production of platinum in the United States in 1906 broke all previous records as to both quantity and value, amounting to 1439 oz., valued at $45,189. This was an increase over 1905 of more than fourfold in quantity and more than eightfold in value. The largest previous production was in 1901, when 1408 oz. were marketed, but the price was then so low that this large output netted only $27,526. In no other year since the Government began collecting the statistics of mineral resources had the output exceeded the production of 1890, which was 600 oz., valued at $2500. These interesting figures are taken from the forthcoming annual report of the United States Geological Survey, prepared by Dr. David T. Day.

It is impossible to divide accurately the platinum production of 1906 among California, Oregon and Washington, inasmuch as by far the greater part of the product was obtained from miscellaneous assignments of gold dust from the Western assay office to the New York assay office. In spite of the interest aroused in the study of platinum resources in the United States, the changes in price have not been effective in developing any greater confidence among the placer miners in platinum localities in the stability of platinum prices in the future. This has delayed the natural effect of stimulating a much greater production from American localities. One considerable shipment of heavy black sand was made from the Oroville District to Denver, with the result of a somewhat larger yield of platinum than would ordinarily have been expected from these residues. Meantime, the high price of platinum has had another beneficial effect upon production, in that platiniferous gold dust has been received with more favor in the United States mints, so that the quantity of platinum recovered in gold refining has exceeded all previous records. A greatly increased production may be expected from California and Oregon. Reliable reports have been sent in to the Survey, and even reliable assays made, showing the occurrence of platinum in certain copper-nickel ores in southwestern Utah and in eastern Nevada, and within the last year two companies have developed in the Bunkerville District, in the northeastern part of Lincoln County, Nevada, considerable supplies of low grade copper-nickel ores somewhat similar to the Sudbury ores and in what is claimed to be a similar geologic condition.

The principal source of platinum to supply the world's markets is found in the Ural Mountains, which for the past three years have furnished an average of 200,000 oz. annually. According to official Russian statements, the demand for platinum has become permanent, and at present Great Britain, France, the United States, Germany and Russia together require annually as much as 23,292 lb. of this metal. Of this quantity the United States takes approximately 7200 lb.; Great Britain, 6696 lb.; Germany, 4752 lb.; France, 4356 lb., and Russia, 288 lb.

It is stated that in the total quantity of platinum annually used about 35 per cent. of old metal is worked up again, and if this amount is deducted from the total requirements the five countries mentioned would absorb annually a little more than 15,000 lb. of fresh platinum, which is considerably in excess of the reported annual world's output. Under these conditions it is not surprising that there should be a steady upward tendency in the price of platinum, especially when the fact is borne in mind that a considerable part of the platinum output of Russia is concentrated in the hands of the so-called French Platinum Company, which at present is absolute master of the market and can regulate prices at will.

W. L. C.

The Lowering Grade of Our Iron Ores.

BY EDWIN C. ECKEL, WASHINGTON, D. C.

In reviewing the report on the iron ore production of 1906, which was prepared by the writer and recently published by the United States Geological Survey, a trade paper took occasion to deduce from some of the figures there presented the conclusion that no marked annual decrease in the grade of ore was noticeable. This conclusion was so far at variance with common opinion on the subject that it seemed worth while to examine the matter with some care, and see if the statistics would not yield results more closely in conformity with the price-lists. The results of that inquiry are herewith presented. They seem to be fairly conclusive on the question at issue, while in addition certain facts of general interest were developed.

Apparent Annual Ore Consumption.

The accompanying table, No. 1, reprinted from the Geological Survey report, includes data on certain factors from which an approximate estimate of our annual ore consumption is deduced. The result is of course merely an approximation, for no data are available on certain factors which should enter into the final result. The elements accounted for in the table and estimate are (1) domestic iron ore production; (2) stock of ore at mines; (3) imports of ore; (4) exports of ore; (5) stocks of ore at lake ports; (6) zinc residuum production.

The estimates given in the last column of this table, on the apparent annual consumption of all kinds of iron ore, furnish the best available basis for consideration of the question of change in grade of ores. It would of course be entirely practicable, by making certain fairly accurate assumptions as to the composition of the ores imported for use in American blast furnaces, to eliminate these imported ores from the matter, and confine it strictly to domestic ores. It is questionable, however, whether this extra refinement of calculation would add materially to the accuracy of the final result.

The table of annual apparent ore consumption is to be used by comparison with the annual pig iron output of the United States. The two sets of figures are accordingly presented in the first two columns of table No. 2.

Table I.—Apparent Consumption of Iron Ore for All Purposes, 1889-1906, in Gross Tons.

Year.	Domestic iron ore produced.	Stocks of ore at mines.	Imports.	Exports.	Stocks of ore at lower lake ports, December 1.	Zinc residuum.	Apparent consumption.
1889	14,518,041	2,256,973	853,573	.....	2,607,106	43,648	14,366,562
1890	16,036,043	2,000,000	1,246,830	.....	3,893,487	48,560	16,302,025
1891	14,591,178	2,450,279	912,864	.....	3,508,489	38,228	15,476,989
1892	16,296,666	2,911,740	806,585	.....	4,149,451	31,859	16,032,687
1893	11,587,629	3,526,161	526,951	.....	4,070,710	37,512	11,616,412
1894	11,879,679	3,236,198	167,307	.....	4,834,247	26,981	11,600,393
1895	15,957,614	2,976,494	524,153	.....	4,415,712	43,249	17,203,255
1896	16,005,449	3,405,302	682,806	.....	4,954,984	44,953	15,765,128
1897	17,518,046	3,098,287	489,970	.....	5,923,755	33,924	17,380,184
1898	19,433,716	2,846,457	187,208	.....	5,136,407	48,502	20,708,604
1899	24,683,173	2,320,278	674,082	40,665	5,530,283	65,010	25,513,903
1900	27,553,161	3,709,950	897,831	51,460	5,904,670	87,110	26,722,583
1901	28,887,479	4,239,823	966,950	64,703	5,859,663	52,311	29,357,171
1902	35,554,135	3,834,717	1,165,470	88,445	7,074,254	65,246	35,886,921
1903	35,019,308	6,297,888	980,440	80,611	6,371,085	73,264	34,232,399
1904	27,644,330	4,666,931	487,613	213,865	5,763,399	68,189	30,224,910
1905	42,526,133	3,812,281	845,651	208,017	6,438,967	90,289	43,433,138
1906	47,749,728	3,281,789	1,060,390	265,240	6,252,455	93,461	49,355,343

The third column of this table contains data derived from the first two by simple division. The fourth column is derived from the third by use of a table of reciprocals, and is therefore not accurate past the first decimal.

Table II.—Comparison of Iron Ore Consumption and Pig Iron Production.

Year.	Apparent consumption of iron ore. Gross tons.	Pig iron produced. Gross tons.	Tons of ore used per ton of pig made.	Percentage of metallic iron in ore.
1889	14,366,562	7,603,642	1.89	52.91
1890	16,302,025	9,202,703	1.77	56.50
1891	15,476,989	8,279,870	1.87	53.48
1892	16,032,687	9,157,000	1.75	57.14
1893	11,616,412	7,124,502	1.63	61.35
1894	11,600,393	6,657,388	1.74	57.47
1895	17,203,255	9,446,308	1.82	54.95
1896	15,765,128	8,623,127	1.83	54.64
1897	17,380,184	9,652,680	1.80	55.56
1898	20,708,604	11,773,934	1.76	56.82
1899	25,513,903	13,620,703	1.87	53.25
1900	26,722,583	13,789,242	1.94	51.55
1901	29,357,171	15,878,354	1.84	54.35
1902	35,886,921	17,821,307	2.01	49.75
1903	34,232,399	18,009,252	1.90	52.63
1904	30,224,910	16,497,033	1.83	54.64
1905	43,433,138	22,992,380	1.88	53.19
1906	49,355,343	25,307,191	1.95	51.28

At first glance the data presented in the third and fourth columns of table No. 2 appear to be too contradictory to give results of much value, though even by inspection it is possible to see that the average for the past eight years or so must fall several points below the average for the eight preceding years.

The conditions are shown more clearly, as usual, when the data are put in diagrammatic form, as in Fig. 1. The form of this curve should be studied, bearing in mind at the same time the general condition of the iron industry in the different years covered by the figure. When this is done, it will be seen that the complex of figures in the table results from the action, sometimes opposing and sometimes cumulative, of several quite regular tendencies.

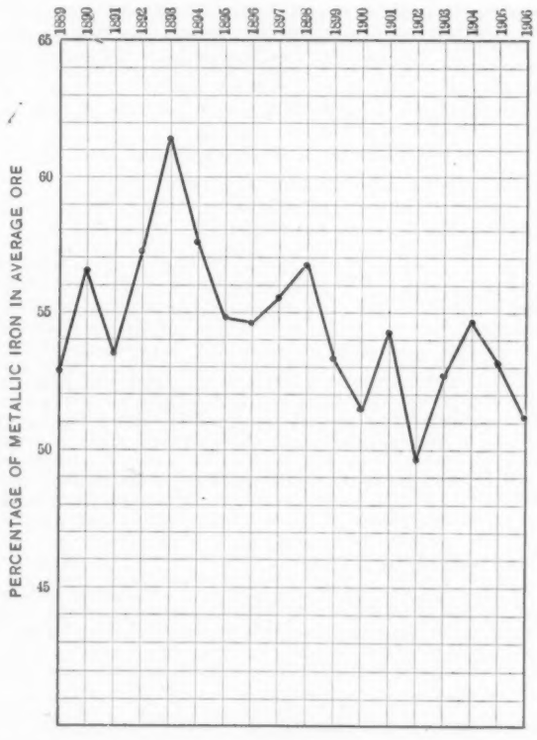


Fig. 1.—Diagram Showing the Fluctuations in the Metallic Iron Contents of Lake Ores from 1889 to 1906.

Factors Determining Ore Grades.

The question of changing grade in ores is not simple, and therefore the curve does not fall regularly with the years. Its form is determined by a number of factors, of which the most important are:

1. The general condition of the iron industry. During hard times, when iron production is cut down, ore prices are low, and the grade of ore used is subject to close scrutiny. During a period of low iron production, therefore, the average grade of ore used will be high. When prosperity is at hand, however, ore prices are high, and the furnaces will take almost anything that can reasonably be called ore. In a boom period, therefore, the average grade of ore used will fall.

2. The discovery of new sources of ore supply. When a new high grade ore district is discovered the tendency is for the average ore grade to rise sharply as the new product enters the market, and then to fall gradually but regularly when the new field begins to show signs of exhaustion. During the period covered by this table and diagram only one such important discovery was made, and the first heavy shipments from the Mesaba range carry the average for the year 1893 to the highest point on record.

3. General exhaustion of ore supplies. This factor, though overshadowed at times by the two preceding, is the one which must be the final cause of any regular decrease in average grade of ores. It would be important, even if the pig iron production were constant, but it assumes much greater importance when an annually increasing demand for ore has to be allowed for.

The effect of these three main factors can be traced on the diagram with some distinctness. Our highest average was reached in 1893, when a fresh supply of high grade ore reached the market during a period of low iron production. In this case the two factors had a cumulative effect. If the Mesaba had made its first heavy shipments during a boom year it would have tended to neutralize the temporary lowering of grade due to the boom.

When allowance is made for the varying condition of the iron trade in the different years, it must be said that the diagram seems to show a fairly regular decrease in ore grades. From the high point of 1893 the progress downward has been as steady as could reasonably be expected. It might be added that, if the form of the curve is prophetic, the next boom in the iron trade will find us using ores which average not over 47 per cent. metallic iron.

The Flour Mill Machinery Trade.—W. C. Marmon of the Nordyke & Marmon Company, Indianapolis, Ind., reputed to be the largest builder of flour mill machinery in the world, and also a well-known manufacturer of automobiles, says, concerning the report that the company had laid off hundreds of men: "While working only a moderate force on production in its motor departments, it is working full force, full time, in the tool department, completing jigs and fixtures for 1908 motor cars. It is taking advantage of the temporary lull in business to finish up jigs and equipment to the minutest detail in a way which has been impossible in previous seasons. Aside from the present financial situation, with orders on hand from old dealers with whom contracts have been renewed, and from new connections made, the company has promise of a substantially increased motor car business for the season of 1908. Even without two large contracts, recently booked, the company has orders for a larger volume of millwork than ever before in its history at this season, and notwithstanding the recent financial disturbance none of these orders has been canceled, nor have instructions been received to hold up the shipment of any of them." Of the two large contracts referred to one is for remodeling the mill of the Wabasha Roller Mill Company, Wabasha, Minn., to increase its capacity 1000 barrels a day. The other is for remodeling the large Melbourne Mills at Philadelphia, and for building a new mill at Minneapolis, both of these from the Russell Miller Milling Company, Minneapolis. This new mill is to have a daily capacity of 3000 barrels, and no expense is being spared to make it the finest mill in the world.

At a recent meeting of the directors of the Michigan Copper & Brass Company, Detroit, Mich., George H. Barbour was elected president; James E. Danaher, first vice-president; David M. Ireland, second vice-president; George H. Barbour, Jr., treasurer, and J. R. Owen, secretary.

Smoke Prevention in Cities.

A Late Study of the Problem at Syracuse, New York.

An important contribution to the literature of smoke prevention in cities has been made by a committee of the Chamber of Commerce of Syracuse, N. Y., a committee noteworthy for the representative character of its membership. John A. Mathews, Crucible Steel Company of America, is chairman, and his associates are John H. Barr, Smith Premier Typewriter Company; W. H. Blauvelt, Semet-Solvay Company; Carleton A. Chase, Syracuse Chilled Plow Company; William Kent, Syracuse University; J. D. Pennock, Solvay Process Company, and John E. Sweet, Straight Line Engine Company. The committee says that it has corresponded with or interviewed the smoke inspectors of several cities where smoke betterment measures have been enforced, and has corresponded with 100 firms representing diverse industries; also with leading makers of smoke preventing devices. Individual members of the committee have investigated the workings of smoke ordinances in Detroit, Cleveland, Chicago and Milwaukee. While the complexity of the problem is recognized, the committee finds that good progress has been made in various cities in abating smoke, and it believes as good or better results can be attained in Syracuse. It does not have great expectations of drastic ordinances, but considers that the enforcement of ordinances must be rendered unnecessary by the hearty co-operation of steam users. Cleveland is cited as an example of a city in which no real results were accomplished until the manufacturers themselves took hold of the mattter. Now arrests and fines are the exception. The point is made that when it can be demonstrated that economies may be effected by improved methods of firing the enforcement of an antismoke ordinance becomes a voluntary act of self-interest on the part of the manufacturer.

The Movement in Various Cities.

The introductory portions of the report are devoted to a discussion of the legality of the present smoke ordinance in Syracuse, a reference to government work on smoke betterment, a summation of the damage done by smoke, and a consideration of the coals available in Syracuse and of other local conditions. Some interesting data appear in the summing up of results attained in other cities. In Rochester 66 stokers representing five different types have been installed, and over 100 devices classified as automatic steam jets, air blasts and draft regulators. In St. Louis 550 boiler plants have been equipped with steam jets and air blast devices, 264 have down draft furnaces, 50 have special firebrick arches and 19 have automatic stokers. At 74 plants electric power is used and 26 burn smokeless fuel. The small proportion of mechanical stokers and the large proportion of down draft furnaces is marked in St. Louis. In Detroit the opposite tendency is noticed, a relatively large number of mechanical stokers and the replacement of steam jets and similar devices originally installed, by the more expensive and more efficient mechanical devices.

In giving the results of its inquiries among 100 manufacturers, hotels and business firms in Rochester, Cleveland, Detroit, Chicago and Milwaukee, over half of whom replied, the committee says:

Only two replies seemed to indicate that the writers were in any degree dissatisfied with their efforts or results. The plants covered installations of from one to 34 boilers. Twelve stated that they were normally operating above rated capacity. When asked to what extent they considered that they had lessened smoke, 46 out of 52 stated 75 per cent. or more; 6 stated between 50 and 75 per cent. A saving in labor was reported by 25; no saving in labor by 23, the latter including for the most part small plants. As regards repairs 19 reported a saving, and 24 reported no saving; a few reported repairs increased. A saving in fuel was reported by 29, no saving by 14; none reported increased coal consumption. It was stated by 20 that cheaper coal could be used, while 16 had made no change in their fuel. As regards the gross cost of steam since installing smoke preventing devices, 20 report a decrease, 10 report no saving, while 11 were doubtful.

The two questions which gave us the most valued information were prompted by a desire to know just how the manufacturers and other erstwhile offenders felt about it. The first of these questions was: "Do you consider that in making this installation of a smoke preventing device you have made a sacrifice to public sentiment?"

To this question 32 replied No, and of 10 who said Yes, only five were using mechanical stokers.

The other question was: "Do you consider that the good accomplished in smoke abatement is worth the cost to manufacturers, hotels, &c.?"

Thirty-two said Yes; two said No, and six were in doubt. We consider this very strong evidence that the manufacturers themselves do not consider that they have been oppressed.

Experience with Various Devices.

The committee gives extracts from lettters of smoke inspectors in several cities relative to the merits of various devices. From these the following are taken:

One says: "Inclined grates in wide and long settings are not liable to feed evenly, unless the attendance is good and coal as near nonclinkering as possible is used. Some underfeed stokers are very good for the prevention of smoke, but make a local heat which is liable to burn and bag the boilers. They are efficient in coal consumption. For small plants, where there is no room to install stokers, automatic steam jets might be properly installed and maintained. I do not favor steam jets (especially home-made) where some mechanical apparatus can be installed."

Another inspector reports: "We have secured good results from automatic stokers, down draft furnaces, various forms of steam and air blast devices and fire brick arches, when properly installed and with due regard to the individual plant requirements. However, the greatest aid to the solution of the problem we believe to be sufficient boiler capacity to avoid crowding and careful and skillful firing."

From another's experience we learn: "A certain stoker will do well in one plant, when it will not in another. Take, for example, a flour mill or any factory where the load is nearly always the same and the boilers working not more than 25 per cent. over their rating, the Murphy, the Detroit, the underfeeds and several chain grates will all be practically smokeless if properly handled. Where the load is fluctuating, such as in railroad work, the underfeeds do best work. I know of no other stoker that will respond so quickly to change of load. For small plants the steam jets and air admission doors do very good work, but I do not recommend them, as they are only makeshifts and are not economical, but of course we cannot refuse them so long as they prevent smoke."

From another source we are informed: "The best plants in this city are plants operated with chain grate stokers, but in cases where the load is apt to fluctuate very much some of the other stokers, such as the Murphy type or the underfeed type, give the best results. With reference to small plants there are a number of automatic steam jet devices on the market which give good results in abating smoke when they are properly handled and kept in good working order."

Conditions of Complete Combustion.

The sections of the report discussing the principles of combustion and the causes of smoke contain some familiar matter. The difference between the process involved in the use of coke or anthracite coal and that which attends the use of bituminous coal with its 22 to 35 per cent. of volatile hydrocarbons is explained, and the conditions indicated under which complete combustion of the hydrocarbons can be effected. These are stated thus:

(1) A temperature sufficiently high, about 670 degrees C. (1240 degrees F.), to bring about instant ignition of the gases; (2) A sufficient supply of air, preferably heated, to combine with the carbon and hydrogen of the gases, but not a large excess of same; (3) A good mixture of the air and hydrocarbons. Unless these conditions are strictly observed only partial combustion will take place and carbon will separate according to the reaction of air upon methane, ethylene and acetylene, which are the principal gases evolved.

The committee adds:

Carbon, soot or smoke, thus formed, can be burned with very great difficulty; its formation must be prevented. This is possible by increasing very largely the amount of firebrick in the furnace, which by its incandescence from heat stored up and a sufficient supply of air, will burn the gases without precipitating free carbon.

To the inexperienced, heavy masses of black smoke indicate a large loss of fuel. The loss, however, is not as great as it would seem. At a large boiler plant in this vicinity careful tests of the carbon in smoky waste gases were made, which showed that the plant was losing not more than 1 per cent. of the fuel value of the coal in the smoke itself, but at the same time the unburned gases may have caused great loss.

Devices for Smoke Prevention.

In discussing the remedy for smoke the report takes up in order proper hand firing, steam jets, down draft furnaces and mechanical stokers. While in American cities most dependence is put upon mechanical devices, the opposite is true in Great Britain and on the Continent, where much attention is given to the proper hand firing, schools being maintained in some places for the instruc-

tion of firemen. The Prussian Government makes an annual appropriation for such instruction. At some length the report explains the methods resorted to abroad for securing more efficient firing. Particular attention is called to the work of an organization of steam users in Hamburg, Germany. The membership has increased from 60 in 1902 to 150, with 420 boilers under the society's control. The society has an expert staff, which tests boilers as they are brought under its control and sends firemen instructors to give proper directions for remedying bad firing. It is suggested that similar societies in the cities of the United States would accomplish great good.

Concerning steam jets the report says that while their cost is low compared with stokers, they effect economy in coal consumption only to the extent to which they more perfectly burn the gases by the admission of neither too little nor too much air to meet the varying requirements of the fire.

Down draft furnaces are described at some length, the principle being that of passing the volatile hydrocarbons through the green fuel before reaching the combustion zone.

Mechanical stokers are taken up under four classes, namely, the forwardly inclined grate, the V-shaped grate, the underfeed stoker and the chain grate. Chain grates are not recommended for coking coals containing less than 30 per cent. volatile matter. The fact is emphasized that in order to prevent smoke it is quite as necessary to maintain the proper conditions for good combustion with stokers as without them.

Railroad Smoke.

The suggested solution of the problem of railroad smoke is insistence on the use of smokeless fuel by shifting and yard engines, permitting through engines to make some smoke. Three smokeless fuels are available in Syracuse, namely anthracite, coke and briquettes. Suggestions are made for the training of firemen in the use of light and frequent firing, also as to the use of mechanical devices, the standardization of grades of coal and its delivery in uniform sizes.

Handling of Devices.

Emphasis is laid on the necessity of properly operating mechanical devices. The St. Louis smoke inspector's office notes that the greatest aids to the solution of the smoke problem are sufficient boiler capacity to avoid crowding, and skilful and careful firing. Too many owners think that once a mechanical stoker or other device is installed it should take care of itself. Cleveland reports that very much of the trouble still noticed is due to the failure of the men to operate the devices properly.

Some interesting data are taken from the report of the Syracuse committee's representative at the convention of smoke inspectors in Milwaukee in June, 1907. The following extracts are given:

Many discussions were held on the general subject of smoke abatement, the means for abating it, and the success that has been reached in different cities. There was no question at all as to the practicability of getting rid of all the smoke from steam boiler furnaces except occasional puffs of light smoke during the cleaning of fires, provided the necessary conditions of furnace, draft and careful firing were obtainable. It was acknowledged unanimously that practically complete smoke suppression can be obtained with any one of a great number of different devices. It was stated by several of the inspectors that many concerns that had put in automatic stokers only after threats of prosecution, were now very well pleased that they had put them in, on account of the great saving of fuel that had resulted.

The chief complaint of the smoke inspectors is that the boiler owners employ firemen at low wages and of a low grade of intelligence; that these firemen, while perfectly able to suppress smoke when they are being watched, fail to suppress it as soon as they think no one is watching. The statement that the most effective way for suppressing smoke in such cases is a rigid enforcement of the law and the fining of such firemen, or their employers, was strongly applauded. The visiting members were taken to see several plants in Milwaukee, where automatic stokers and down-draft furnaces were used, in which the smoke suppression was practically complete.

There is no difference of opinion among the smoke inspectors and their engineers as to the means by which smoke could be prevented, such as a proper design of furnace and stokers, the driving of them at a rate not beyond the maximum capacity for which they are designed, the use of means for thoroughly mixing hot air with the gases of combustion, the large combustion chambers, and finally the intelligent and careful operation of the furnaces.

Economy from Smoke Abatement.

The committee says that with proper application of smoke preventing devices the manufacturer can always rely upon increased economy in the use of fuel, the amount of improvement depending largely upon the degree of badness of the previous conditions. Manufacturers at first averse to making changes which would prevent smoke have become thoroughly converted to the advantages of such effort. Some suggestions as to methods are made by the committee as follows:

If the plant is large enough to warrant the installation of mechanical stokers and coal handling equipment, the owner can greatly reduce the quantity of smoke emitted and at the same time effect a considerable saving over hand-firing. A fair return on the investment for mechanical stokers can be reasonably expected with such a plant.

In small plants, consisting of but one or two boilers, cheaper installations, such as the various steam jet devices, may prove effective in reduction of the volume of smoke, but it is not to be expected that these devices will result in any considerable economy of fuel; on the other hand, unless properly operated, they are quite apt to increase the cost of operation.

Plants of moderate capacity, too small to make the installation of mechanical stokers advisable, may quite effectively reduce the formation of smoke, and with good economy, by the use of down-draft furnaces. This is particularly the case when the fuel is of a favorable quality, the draft is good and the demand for steam is such that the boilers are not necessarily forced at times much beyond the normal capacity.

The cost of installation of any of the smoke preventing appliances is, of course, more of a burden in case of an existing plant than in the erection of a new one.

Under the local conditions at the present time the cheaper grades of anthracite coal may be substituted for bituminous coal at small additional cost of operation and little cost for equipment in plants of small or moderate capacity, provided there is sufficient draft.

The various furnaces known as Dutch ovens are applicable when there is room in front of the boilers to install them, and, if properly fired, they will produce good results as to economy of coal and reduction of smoke through good combustion. The initial cost of installing these is somewhat less than for down-draft furnaces, but they, with average skill on the part of the fireman, will probably not be quite so satisfactory a remedy for smoke as the down-draft furnace. Where the Dutch oven is not applicable, long passages under firebrick arches are helpful.

Any method of reducing smoke through obtaining better combustion promises economy of fuel, whether due to special appliances or more skillful firing. In some cases a bonus to the fireman has produced good results, but owing to the weakness of human nature the permanent effectiveness of such measures is a somewhat doubtful quantity. Continuous indicators of the percentage of carbonic acid in the chimney gases have been used as a means of determining such a bonus, and in large plants these devices have produced good results.

The Committee's Recommendations.

The committee concludes its excellent and thorough discussion of the subject by making the following recommendations:

"1.—The purchaser should put the burden of responsibility upon the firm installing the device. The difficulty of proper selection is very much increased by the fact that probably all devices can point to some successful installations, but each device must be adapted to the conditions existing in the plant in which it is to be used. Sometimes the mere changing of a fuel, for example, from a noncoking to a coking coal, causes a previously successful arrangement to become an entire failure. Many patentees and manufacturers of smoke preventing devices, in their anxiety to make a sale, entirely fail to properly study the conditions at the plant of the proposed purchaser, with the result that the device is a failure and the prospective purchaser becomes disgusted with the whole subject of smoke prevention. For the protection of the would-be purchaser, it is necessary that the burden of responsibility should be put squarely and fully upon the firm installing the device, and no prospective purchaser should permit an installation unless he is satisfied that the representative of the manufacturer has thoroughly studied all the conditions at the plant which may effect the success of the device; and when once installed, he should see that all claims as to economy and smokelessness are fully substantiated.

"2.—Plans for new steam plants should be submitted to some competent authority for approval. In order that the intending purchaser may have the greatest possible protection and may be saved the disappointment and expense of a failure (and there would be sure to be some expense incurred in the trial of an unsuccessful appa-

ratus, no matter how broad might be the guarantee of the maker), prospective purchasers should submit the plans for the installation to some competent engineering authority for approval. Such expert should not be connected with the selling interests of any stoker manufacturer and should be free from hobbies, and should have no commercial interests and affiliations apt to influence his judgment. The conditions necessary to make such devices successful are well known to those making a specialty of this work, and a capable steam engineer, if familiar with the conditions existing at the plant, should be able to advise the prospective purchaser to his material advantage as to the probable success of the proposed smoke preventing device, as well as regarding all details of style of boiler setting, size and hight of stack and grate areas.

"3.—Success in smoke prevention can only be attained through the hearty co-operation of the coal users themselves. Very many installations for the prevention of smoke are successful at first, when everything is new and when the apparatus is operated as intended, but if the owner loses interest the subordinates quickly follow, and very soon the smoke is as bad as before. Like all other additions to a plant intended to increase economy or to improve conditions, the devices for preventing smoke add some complication to the original plant and require intelligent control. So it is of the utmost importanace that the owner should insist upon the apparatus receiving proper attention, and upon the carrying out of the principles and conditions necessary for success.

"A clear sky and a city free from smoke can only be obtained by a friendly and hearty co-operation of all steam producers to abide by the ordinance, the stronger helping the weaker by example, suggestion and encouragement. This would seem to indicate as desirable an association of all steam producers similar to that formed in Hamburg, which meets regularly for the consideration of questions relating to the economical production of steam without smoke. All new devices for smoke prevention are thoroughly investigated by the association and two thoroughly experienced firemen are employed to visit the various plants owned by members of the association to educate the firemen in proper methods of firing and to otherwise produce economical conditions, particularly as to carbonic acid content and temperature of waste flue gases."

Customs Decisions.

Halter or Tethering Chains.

The Hurty-Simmons Hardware Company, Minneapolis, Minn., has been defeated before the Board of United States General Appraisers in an attempt to secure a lower duty on halter or tethering chains upon which duty was assessed at the rate of 3 cents per pound, as "chains made of uncoated iron wire," as that term is used in the tariff law. It was maintained by the importers that the chains should be allowed to enter as articles manufactured from iron or steel wire at 2½ cents per pound under the provisions of paragraph 137. General Appraiser Fischer, who writes the decision for the board, says there is nothing in the evidence put before the tribunal to disturb the classification imposed by the collector.

Unfinished Scissors Blades.

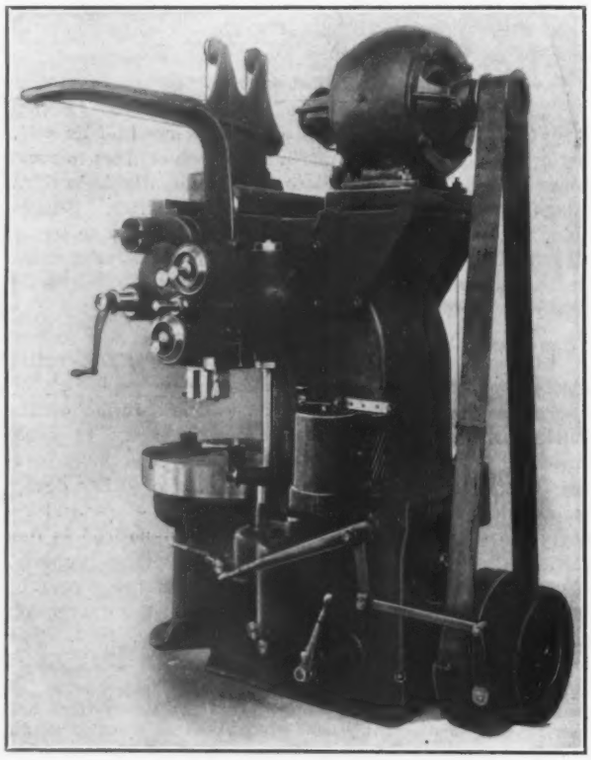
A decision has been handed down by the board adverse to the claim of Hermann Hessenbruch, Philadelphia, for a reduction of duty on unfinished scissor blades imported in the rough state. Objection was taken to the assessment of duty at the rate of 15 cents per dozen and 15 per cent. ad valorem under the appropriate provisions of paragraph 153, it being alleged that the blades should be admitted to entry at 35 per cent. as forgings. The board finds that the articles are specially provided for in paragraph 153 as blades for unfinished scissors, and consequently the return of the collector is upheld.

Magnesia Rings for Mantles.

Judge Martin in the United States Circuit Court at New York, has sustained a contention made by A. L. Crawford, it being held that magnesia rings used for holding incandescent mantles in position are properly dutiable under the provision in the tariff for nonenumerated manufactured articles. The action of the Board of Appraisers in upholding the classification imposed by the collector, at the rate of 35 per cent. ad valorem under the provision for articles composed of mineral substances is disapproved. The question of the admissibility of evidence also figured in this case. In the case at bar, an importer appeared before the Board of Appraisers and submitted his case on the record and official sample, without introducing any evidence in support of his contention. Relative to this action, the court holds that evidence as to the circumstances connected with this submission is admissible in the Circuit Court on appeal from the board, but that evidence on the merits of the main question is inadmissible.

A Gisholt Motor Driven Boring Mill.

One of the latest forms of self-contained motor drive as applied to a boring and turning mill, is shown in the accompanying illustration. Both the mill and the drive are designs of the Gisholt Machine Company, Madison, Wis. A 5-hp. variable speed Northern motor, with a 4 to 1 range of from 400 to 1600 rev. per min. is the driving medium. With this form of drive a single friction pulley, controlled by the lever shown, takes the place of the three-step cone pulley usually supplied on the belt driven machine. Through the friction clutch provided in connection with the driving pulley, the table is under the



A 36-In. Boring and Turning Mill with Motor Drive, Built by the Gisholt Machine Company, Madison, Wis.

complete control of the operator, and may be started, stopped or moved any fractional part of a revolution. No additional floor space is required for the motor since it is mounted on a bracket at the top of the housing, and is within the greatest length and width dimensions of the machine.

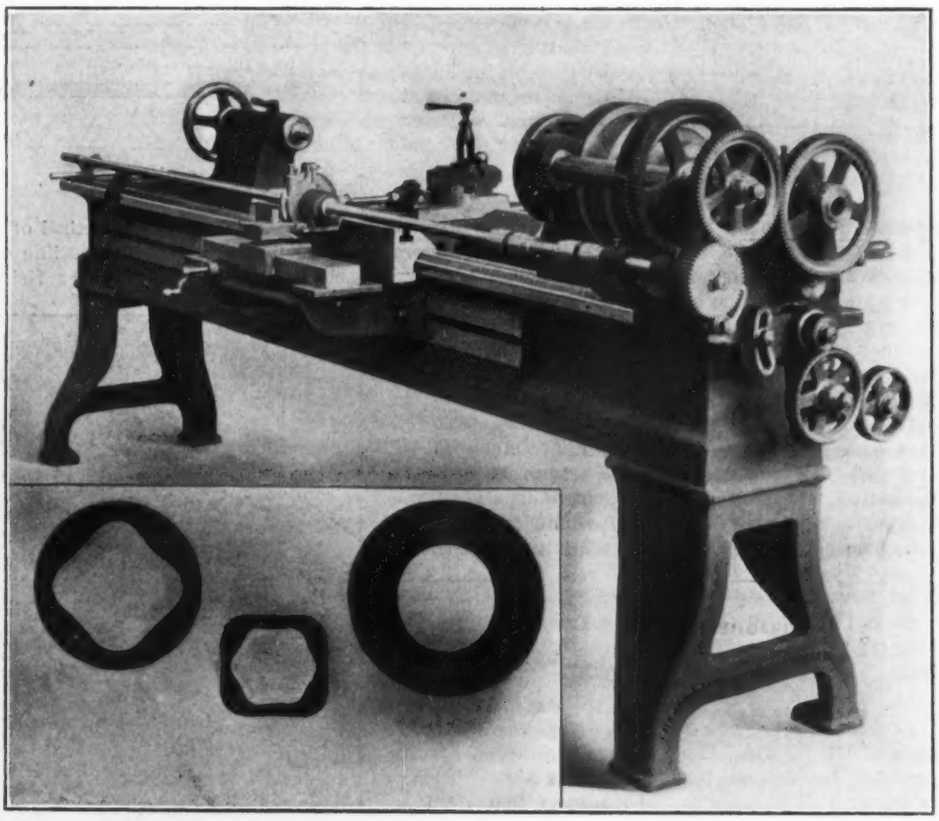
The machine proper is provided with eight changes of positive gear driven feed, having, however, safety slipping device to prevent the breaking of gears by careless handling. In connection with each feed screw is a micrometer index dial reading to 0.001 in., making it possible to move a turret tool in any direction any amount as measured in thousandths of an inch without the use of a scale. By means of the feed tripping device any feed may be stopped positively at will or automatically at any predetermined point. The dials for controlling the feed trip may be seen at the end of the cross rail in the illustration. Whether the dials are set or not, this device will automatically trip the feed at either limit of its traverse. The machine may be fitted with either a plain table or a chuck, and has an extreme swing of 36½ in.

The Derrer Universal Shape Attachment for Lathes.

To explain at once the somewhat ambiguous title, it should be stated that the engine lathe attachment illustrated is one that enables the turning and boring of various regular sections other than the plain circular one identified with ordinary lathe work. Examples are illustrated in the engraving, and include elliptical and other sections approximating regular polygons with rounded corners and concave sides. Strictly speaking, it is a misnomer to call the attachment universal, since it will not turn irregular sections, but it will produce a large number of shapes that were heretofore unobtainable in a lathe, and it will probably suggest the application of these shapes to useful purposes never before thought of. One that has already proved of commercial importance is the turning of elliptical taper shanks on drills, doing away with the need of tangs, which are a source of annoyance from their tendency to twist off. It was the quest of a remedy for this evil that led to the development of the Derrer attachment, the patents on which are controlled by the Lancaster Machine & Knife Works, Lancaster, N. Y., which is now making a line of oval taper sockets and oval taper shank drills. A shank of this form, fitted in a socket to correspond, is prevented from twisting or slipping and true running of the drill is insured. Old drills with broken tangs can easily be turned oval and tapering on the shank and made again useful.

The attachment is applied preferably as a part of the taper slide of an ordinary lathe having a taper turning attachment. The lathe illustrated is one built and equipped by the W. P. Davis Machine Company, Rochester, N. Y. In the bearing at the rear of the slide is a sleeve carrying an eccentric, the strap of which is connected to the cross slide of the lathe by a rod, so that when the cross feed screw nut is disengaged the cross slide is allowed to reciprocate freely upon the taper slide of the carriage when the eccentric is revolved. The sleeve carrying the eccentric is driven by a splined shaft, which is in turn driven through universal joints and spur gears from a gear on the end of the lathe spindle. By using different combinations of gears various ratios of speed between the shaft and the spindle may be established and various forms may be obtained, which are further alterable by varying the throw of the eccentric. The eccentric is adjustable in the extent of its throw by rotating it on an eccentric seat. The outer eccentric is fitted on the inner eccentric with a slight taper, and the inner eccentric has an oval taper fit on the sleeve. When the eccentrics are revolved with respect to each other with reference to graduations on the outer eccentric any throw from 0 to the combined throw of the two eccentrics may be had, and when a setting has been made, simply pressing the parts together fixes the adjustment. As this attachment does not interfere with the regular taper attachment, tapered as well as straight eccentric, oval, or multilobed work may be turned.

Other possible uses of the attachment are in connection with the grinding of the relief on taps or milling cutters, turning eccentric shafts for back gears, punch presses, &c., and oval boring and turning. The latter is perhaps its most useful and novel function, as it enables the securing of a gear or wheel to a shaft without keys or pins, and a positive drive is insured. The efficiency of the oval drive, it is stated, has been fully demonstrated at the plant of the Algoma Steel Company, Sault Ste. Marie, Ont., where it has been in practical use for two years. As the tool is always tangent to the cut in boring and turning, either straight or taper, the two ends of an oval piece or an oval hole, will always have similar ellipses—that is, there will be a constant ratio between their major and minor axes.



The Derrer Lathe Attachment for Turning and Boring the Shapes Shown, Patented by the Lancaster Machine & Knife Works, Lancaster, N. Y.

A friendly suit for the appointment of a receiver for the American Engineering Company has been begun in the Superior Court at Indianapolis, Ind., by Edward L. Barrows, the company's secretary. The complaint avers that on account of the financial stringency the company is unable to collect accounts due it and meet its obligations. It asks for a receiver to protect the company from lawsuits and enable it to go on with contracts, one of which is the construction of an electric railroad in Texas. C. N. Wilson, president, says the company is wholly solvent, having assets three times its liabilities. To meet any inimical action that might be taken by creditors, the company would have to sacrifice its interests and therefore wishes to be under court protection.

THE READVILLE LOCOMOTIVE REPAIR SHOPS.

A New York, New Haven & Hartford Railroad Improvement.

When it became necessary for the New York, New Haven & Hartford Railroad to increase its facilities for locomotive repair, it was decided that the most suitable point for the erection of such shops would be at Readville, Mass. As its car shops were already located there, this arrangement would effect a concentration of repair work, while the point was otherwise suitable by reason of its being the junction of two main divisions of the road—the Midland and the Providence. Additional property was necessary, and the most natural and desirable was the tract south of the tracks of the Midland Division. Though the locomotive and car departments of the shops appear to be segregated, as will be seen by reference to the ground plan, Fig. 1, they are actually united by subways, Fig. 2, at the east and west ends of the grounds, where main line trains pass under the Midland Division, by a subway at about the middle of the grounds for push car service and foot passengers, and by conveniently located stairways over the Midland Division fill. One main entrance serves both departments and the trackages of each are connected. One shop superintendent has charge of both departments, with a general foreman for each department. The plants are therefore substantially a unit.

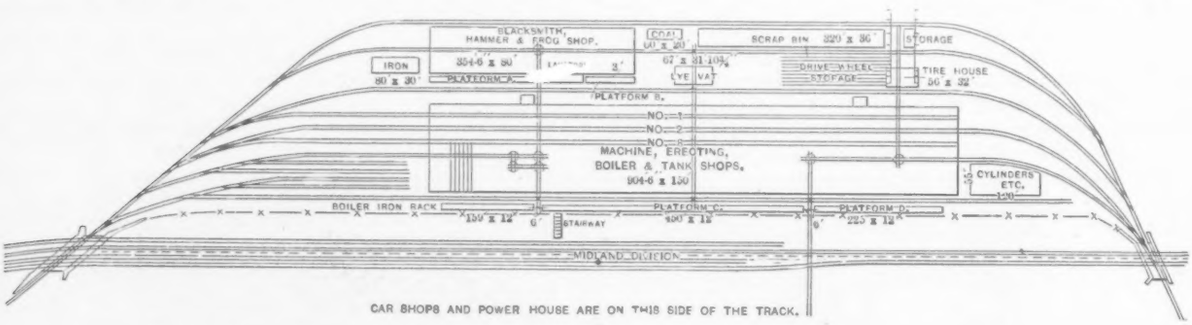


Fig. 1.—General Plan of the Readville Shops of the New York, New Haven & Hartford Railroad.

The car shops have been in operation for several years, and the present article will therefore be confined to the locomotive repair plant, which has recently been put in operation.

The Buildings.

The principal feature of the new plant is a building 904 ft. 6 in. long and 150 ft. wide, in which are included machine and erecting, boiler and tank shops. This is located with its longer axis parallel to the tracks of the Midland Division, and the building and yards are supplied with abundant track facilities by numerous connections with the main line of the Providence Division at the eastern end of the site. By means of a cross-over from the Providence to the Midland Division access to the shops from either division is easily obtained. Other buildings are a blacksmith and frog shop, 80 x 354 ft. 6 in.; an iron shed, 30 x 80 ft. adjoining; a tire house, 32 x 56 ft.; a lye house, 31 ft. 10 in. x 67 ft., and a coal house, 20 x 60 ft. Important structures in the yard are numerous platforms, one extending substantially the length of the main building, 12 ft. in width and terminating at the boiler shop end of the building in a boiler iron rack, 12 x 159 ft.; a platform for cylinders at the opposite end of the building, 55 x 120 ft., at its greatest width, and a scrap platform, 36 x 320 ft., provided with bins for assorted material. Three tracks entering from the east pass entirely through the main building; three others are carried through and upon each side of the blacksmith shop and alongside the scrap bins, while another passes between the long platform previously mentioned and the north side of the main building. Adjacent to the tire house is a yard for drive wheel storage.

The Locomotive Shop.

A large number of features in the design, construction and equipment of the locomotive shop, as the main building may be designated, are of particular interest, and a great amount of attention has been given to the working out of details and supervision of construction. The materials are steel, brick and concrete, with mill construction, and the roof is covered with 5-ply asphalt and gravel. The concrete foundations are carried to a hight of 5 ft. from grade, and the sills of the first floor windows are formed directly in this material, no stone sills being used. The concrete floors in the machine shop are laid in squares, although this method of laying is not apparent in the finished floor, the outline of the blocks being formed of a strip of tar paper rising to within

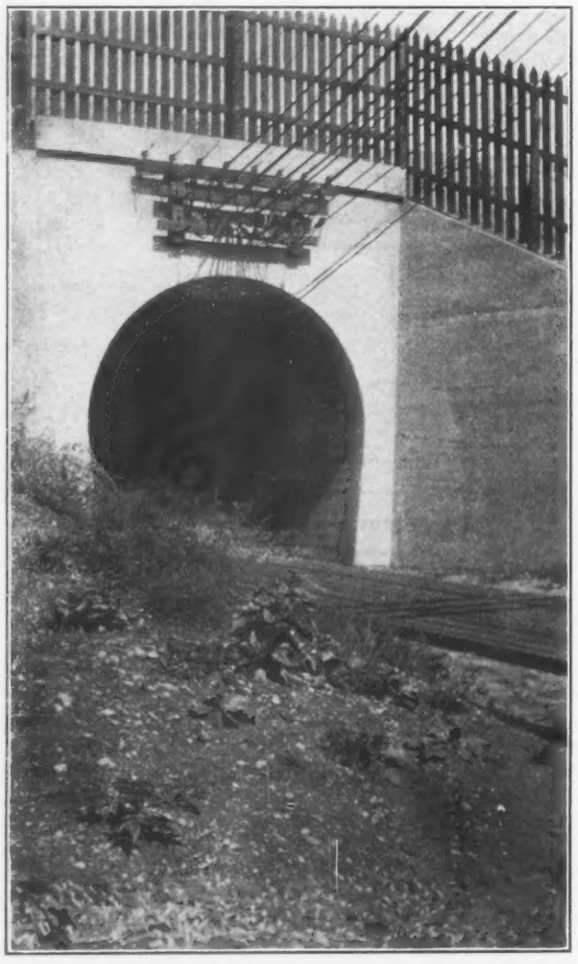


Fig. 2.—Subway Under Midland Division Tracks Through Which the Locomotive and Car Shops Are Connected.

half an inch of the surface and folded underneath the lower edge of the block.

All the steel work was under contract to the New England Structural Steel Company, Boston and Everett,

Mass. The engravings presented herewith do not convey an adequate idea of the handsome and substantial appearance of the work down to the smallest detail. Nor do they give an adequate indication of the care bestowed by the engineering department of the railroad company on the securing of perfect work on the part of the contractor. The method followed may be briefly described. Duplicate blue prints of all general and detail drawings were submitted by the contractor, and, if after checking they were approved, one copy was returned to the contractor with the mark of approval, and the other copy retained in the office files. If upon checking errors were found, they were marked upon each copy and one print returned for revision. The office records show in convenient form the details of every revision, thus preserving every step in the process and affording an indication for the occasion of each change. The plan of this great building is shown in Fig. 3.

THE ERECTING FLOOR.

It is intended that the plant shall afford facilities for the repair of 45 locomotives per month. The erecting floor, Fig. 4, occupies one-half of the building in width and about two-thirds of its length, a space of approximately 200 ft. being allotted at one end for boiler shop purposes and 100 ft. at the other end to serve as a drive wheel shop. Stripping pits, each 150 ft. long, are located at each end of the stripping track, which is the center track of the erecting floor. The stripping pits are flanked on each side by storage pits, which extend the whole length of the space named, or about 600 ft., with the exception of a 20-ft. passageway in the middle of the length of the building, used for a material track, &c. The storage pits are 6 ft. in width, built entirely of concrete, with walls 12 in. thick supported on foundations 18 in. wide and 12 in. deep of the same material. At the extremities these pits are 2 ft. 10 in. deep, and the floors slope longitudinally on inclines of 2 in. in 30 ft. to traps to afford drainage. The maximum depth is 3 ft., and the floors slope in a curve to the center line. The pits are covered with loose 4 x 12 in. yellow pine plank, and every tenth plank is provided with a pair of extra heavy malleable iron handles set flush with the surface. Fig. 5 gives details of the construction of the storage pits as shown in cross section at various points.

In the case of the stripping pits the walls are of concrete, 15 in. thick, on foundations 12 x 24 in. The walls are capped by 8 x 12 in. yellow pine stringers secured by anchor bolts ¾ in. x 24 in., spaced every 6 ft. The space underneath the floor of the pit, which is raised in the center to a hight of 1½ in. in the width of 4 ft., is filled in with gravel, and the floors slope longitudinally 4 in. in 50 ft. to sumps covered with cast iron gratings each in four sections. The rails resting upon the stringers extend ¼ in. above the floor level, and the concrete floor is carried against the outside of the rail and underneath the head, the space between the rails being made concave and sloping longitudinally to bell traps.

Work benches line the entire outer wall for the length of the erecting and machine floors, and are also conveniently located in bays between the center line of columns. The erecting floor is served by two 10-ton and two 60-ton cranes, each of the latter having 10-ton auxiliary hoists. The 60-ton cranes are located in the middle, and those of 10 tons capacity at each end. All cranes throughout the shop were built by the Shaw Mfg. Company, Muskegon, Mich., and are equipped with G. E. type M induction motors.

THE MACHINE SHOP AND GALLERY.

The machine shop space is divided longitudinally by a row of columns supporting a gallery devoted to the lighter classes of work. Fig. 6 shows a cross section of the building, including the gallery. The tool room and brass room are separated from the remaining open space by partitions 12 ft. high, consisting of a wainscot 4 ft. high with crimped wire netting above. Other space is devoted to electric and machine repair, finished bolt department, air brake and water pump repairs, tin shop, pipe shop, lagging and carpenter shop, &c. Four landings projecting beyond the general line of the gallery form a convenience for crane service. The gallery is served by

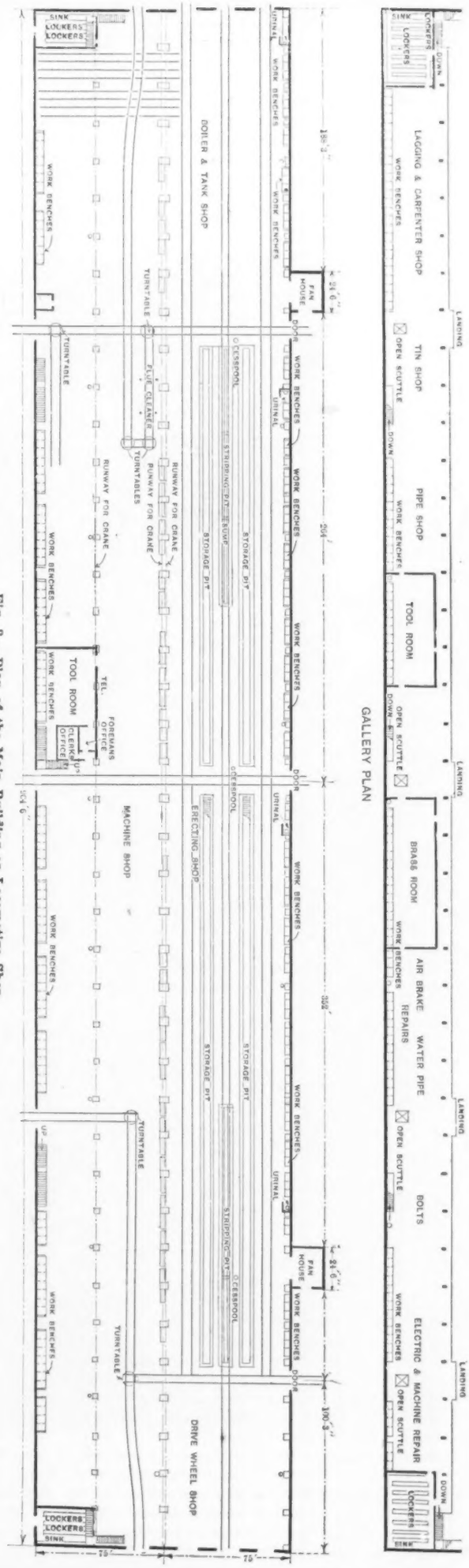


Fig. 3.—Plan of the Main Building or Locomotive Shop.

three 10-ton cranes, which also serve the machine floor, and a unique feature is formed by two 1½-ton hoists, built by Maris Brothers, Philadelphia, and by three of the same kind underneath the gallery, which run the full length of the shop. At convenient distances apart are located four open hatchways, by means of which the upper hoists can drop material through the gallery floor, which can be taken up by the hoists below and distributed to the benches which line the outer wall, and *vice versa*. All hoists are electrically operated by induction motors, and the runways are of single I-beam section. Both the edges of the gallery and the hatchways are protected by 1¼-in. pipe railing on 2-in. pipe supports, the posts at the landings being removable. The hatchways are 7 ft. 4in. x 8 ft. The gallery floors are of 2 x 6 in. spruce laid diagonally on 8 x 16 in. Oregon fir joists and covered with 1 x 4 in. square edge maple.

Each end of the gallery floor is provided with a locker room containing 110 lockers, with suitable lavatory accommodations, and on the first floor immediately below are rooms similarly equipped with 63 lockers each, while on mezzanine floors are located closets and urinals. Fig. 7 shows the high class of the lavatories.

The space under the gallery is devoted to departmental grouping of machine tools, the heavier motor driven tools being located in the space covered by electric cranes. There is an unusually satisfactory feature exhibited in the location of the motor equipment and line shafting. All motors, whether upon the gallery or on the floor below, are mounted upon steel brackets on the nearest row of columns and not against the side walls, thereby leaving the bench light and space absolutely unobstructed in any manner by belting. The neat and substantial appearance of these brackets, as well as freedom from obstruction afforded by their location, is clearly shown in the accompanying illustrations, Figs. 8 and 9. The brackets differ slightly, according to the columns upon which they are located, but consist generally of a frame built up of channel sections, fastened together by angles, attached to the columns with a plate floor 28 x 50 in. and ½ in. thick. Where crane girders intervene the brackets are braced to the bottom flange of the girder.

A complete scheme of shafting was worked out by the engineering department before any of it was put in place. The main line shaft is erected in one continuous straight line throughout the whole length of the shop, the motor or group sections being on an average 44 ft. long, and provided with flange couplings at the ends, a space of ½ in. being left between the faces of the flanges. In the event of the failure of any motor, it is possible to throw off its belt, and by slipping a ½-in. filler between its shaft coupling and the one next, and bolting the two together, the group load can be carried by the motor in the next group. While the group sections are 44 ft. long, each piece of shaft is 22 ft. long; this feature introduces further flexibility, as the section may be divided in the center and half the load distributed to each motor on either side of the one in trouble.

The benches throughout are upon iron frames and are 2 ft. 4⅞ in. in depth. The top and drawer fronts are of oak, and all else of North Carolina pine. The working part of the tops is 3 in. oak.

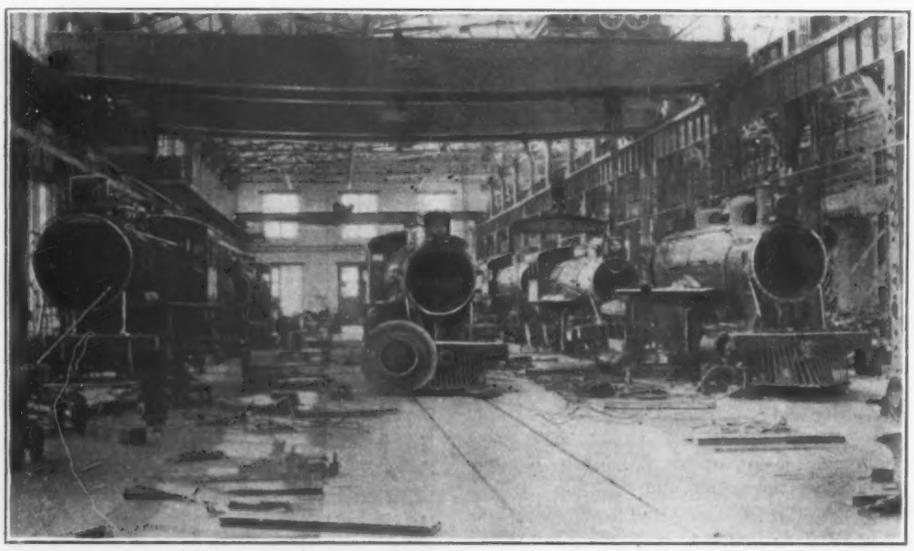


Fig. 4.—The Erecting Floor.

THE HEATING SYSTEM.

In connection with the heating system are several interesting features. The Sturtevant hot air system is employed, having two fan houses. These contain two fans, while two more are located on the gallery. The fans are so spaced as to divide the periphery of the building into four equal parts. The main artery of the system is a concrete duct built entirely around underneath the floor in the shop building near the line of the outer walls and varying in width from 4 ft. to 2 ft. 6 in. and ordinarily 3 ft. in hight, except where some obstruction has necessitated a change in section. Ten manholes afford access to the interior. The underground duct obviates the use of unsightly overhead pipes, and the only parts of the system that appear are the galvanized iron risers, Fig. 10, next to the outside wall.

A novel plan was adopted for making the connections between the duct and the risers. Space was too limited

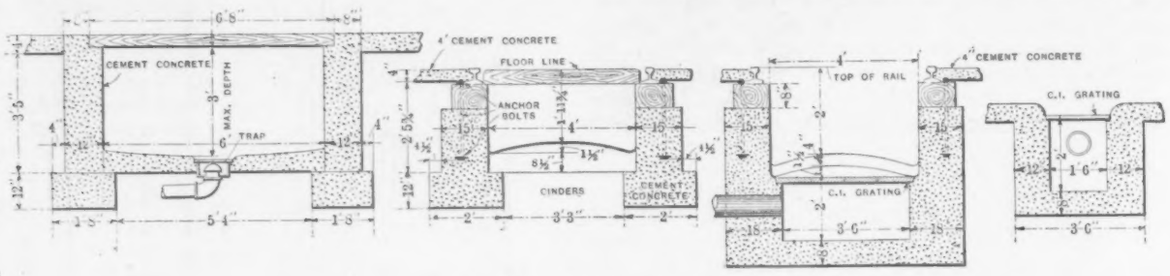


Fig. 5.—Storage Pit Cross Sections.

to admit of the use of the ordinary vitrified elbow, and as a substitute an elbow of No. 20 galvanized iron was used as a form, and around this was constructed a shell of concrete of not less than 2 in. in thickness. This elbow was made to project 2 in. above the floor level, and upon this projection the riser was fitted, the joint then being sealed with a collar of cement. At points where the duct

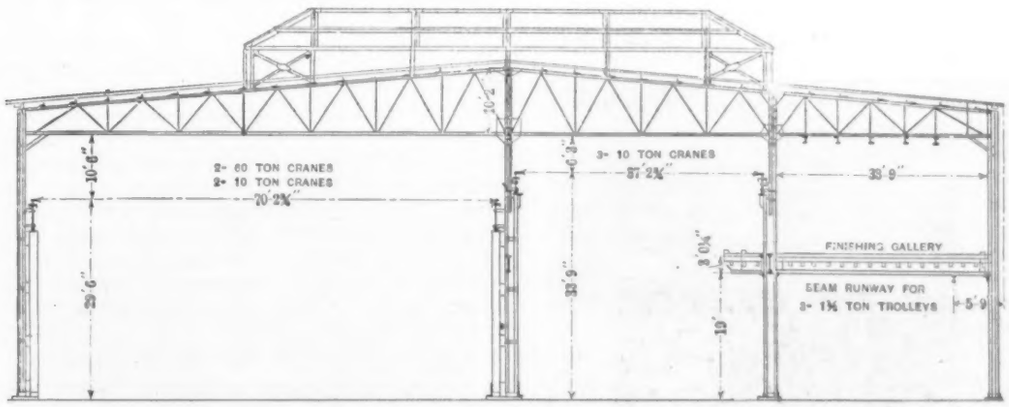


Fig. 6.—Cross-Section of the Locomotive Shop, Showing the Gallery.

is crossed by the tracks entering the erecting shop the rails are secured to an I-beam reinforcement imbedded in the concrete cover of the duct.

There is a gravity return from the heating system to a receiving tank under the floor of the machine shop, and the water of condensation is forced back by a pump to the boiler room. In the boiler end of the shop is a high pressure pump capable of pumping up to 300-lb. pressure, and connected with this is a line of extra heavy piping along the center and side columns for use in testing boilers.

The tool room on the gallery is a manufacturing tool

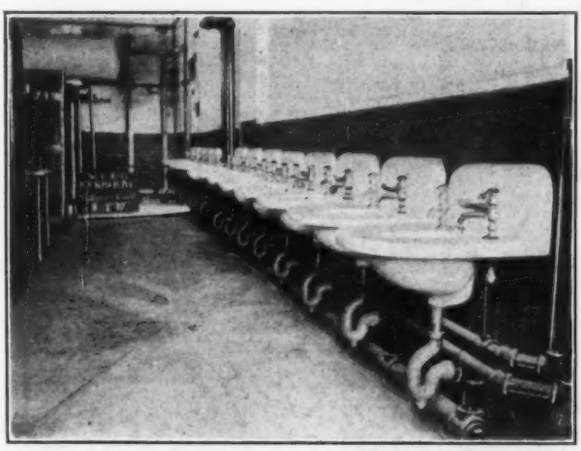


Fig. 7.—A Typical Lavatory in the Readville Shops.

room only, and the corresponding room on the ground floor is for issuing dressing and grinding tools. This becomes the natural central station for a complete telephone system of 31 instruments, 21 of which are local to the locomotive shop and distributed among the several departments. The installation of the telephone system, with switchboard in the tool room and stations at numerous points, obviates the necessity of mechanics going to the tool room for tools. When any special tool is required the mechanic uses the telephone to make known his wants, and the tool is sent by messenger, who takes a check for it. All tool dressing is done in the tool room and not in the blacksmith shop, a suitable forge and power hammer being provided for the purpose.

Cast iron boxes in the floor between the tracks of the erecting shop are provided for the attachment of hose to the air pipe system, and a large number of portable lathes, forges and rivet furnaces, as well as electric drills, are in daily use on the erecting floor and in the boiler and tank shops. Twenty portable forges were recently supplied by the W. N. Best American Calorific Company, New York, to these shops.

THE NUMBER AND CHARACTER OF THE TOOLS.

In the over 300 pieces of shop equipment there are 218 machine tools, the remainder being hand and portable tools, furnaces for welding, annealing, &c., forges, power hammers, presses, grinders, blowers, &c. The machine tools mentioned include only those for such operations as turning, boring and drilling, planing, milling and cut-

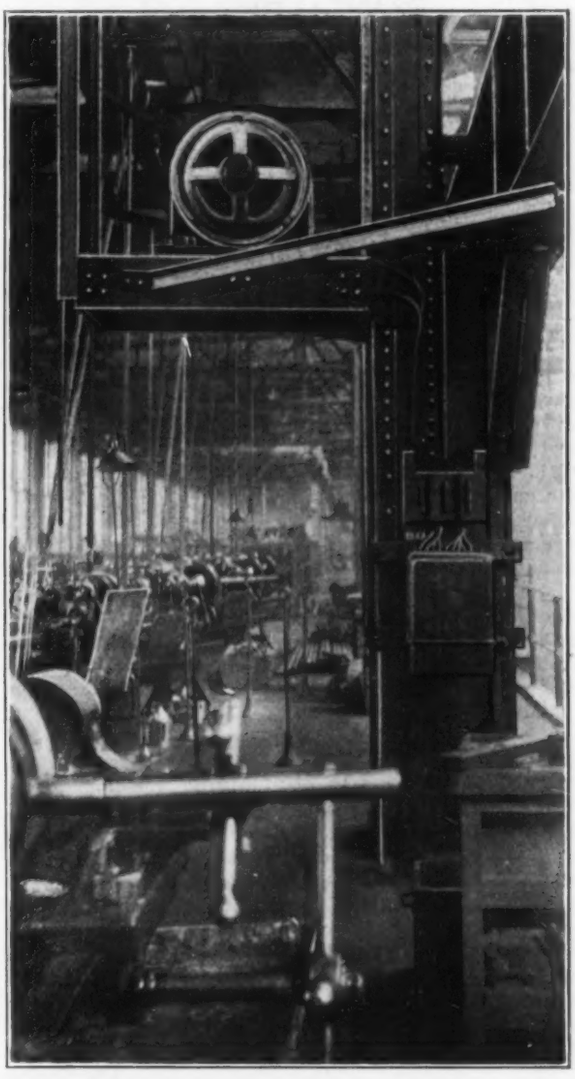


Fig. 8.—Motor Bracket on an Intermediate Column.

ting-off. Of lathes there are in all 77, these being, in the order of their predominance, engine, turret, driving wheel and axle lathes. Boring and drilling machines in-

clude upright drills, vertical boring mills, radial drills, sensitive drills, horizontal boring machines, portable drills and rod and cylinder boring tools, 53 in all. For planing operations, including standard planers, shapers, slotters, crank planers and rod, plate, frog and switch, and valve seat planers, there are 51 tools. The milling machines are of the universal, planer type and vertical patterns and a portable valve port mill; 9 tools in all. Under the heading of cutting-off machinery there are 22 tools, such as standard shears, punches, squaring shears,

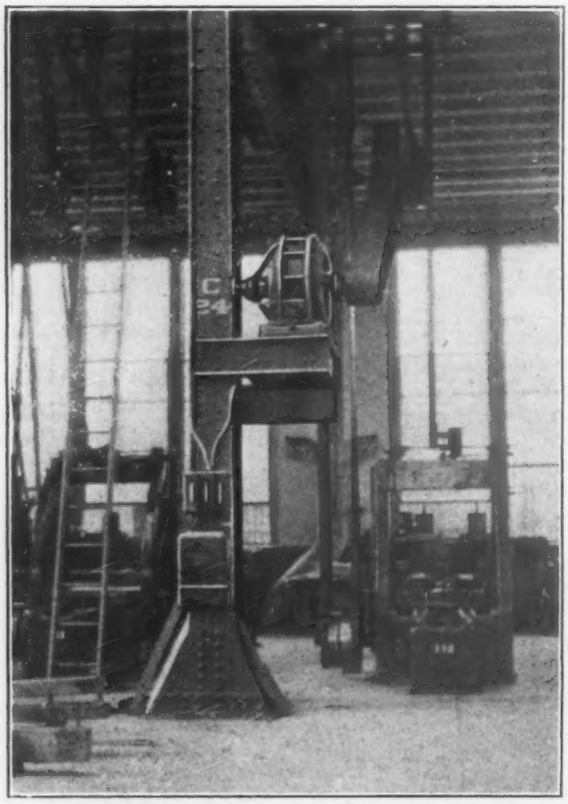


Fig. 9.—Motor Bracket on a Gallery Column.

combined punches and shears, splitting shears, flange punches, bevel shears, bolt cutters, flue cutters and cold saws. Many types of grinders are used, such as drill and tool grinders, emery and buffing wheels, grindstones and plain and special grinders. Among the pieces of thus far unclassified machinery may be mentioned cotter machines, quartering machines, arbor presses, wheel presses, flue welders, flue cleaners, flue testers, valve setting machines and rolling mill scales.

Power is supplied in the main by group drive from electric motors as follows: Group 1, driving wheel work, 25-hp. motor; group 2, driver boxes, 25-hp motor; group 3, driver boxes, 15-hp. motor; group 4, driver boxes, shoes and wedges, 15-hp. motor; group 5, motion work, 15-hp. motor; group 6, motion work, 25-hp. motor; group 7, cross heads and pistons, 15-hp. motor; group 8, pistons, guides, &c., 10-hp. motor; group 9, pistons, guides, &c., 25-hp. motor; group 10, drilling and grinding, 15-hp. motor; group 11, tool room, 15-hp. motor; group 12, rods, 25-hp. motor; group 13, rods, 15-hp. motor; group 14, flue shop, 10-hp. motor; group 15, finished bolts and pins, 15-hp. motor; group 16, brass work, 15-hp. motor; group 17, gallery tool room, 15-hp. motor, and group 18, blacksmith shop, 75-hp. motor. For these 18 group shafts there is a total motor capacity of 370 hp. provided. Where location or size made it desirable, the machines are individually driven by motors, including driving wheel lathes and presses, the largest planers, drills, boring mills, &c. There are 47 machines so driven, and the aggregate horsepower of their motors is 576. The 65 electric motors installed therefore represent a total nominal capacity of 946 hp.

LIGHTING.

Admirable provision has been made for natural lighting. The windows are large and set closely together, especially along the sides. Each bay of 22 ft. between pilasters contains two sets of triple sash, the second floor windows being 13 ft. 1¼ in. x 15 ft. 8 in.—three sections of 50 10 x 14 in. panes each—and the lower windows 15 ft. 8 in. x 17 ft. 8 in., and consisting of three pairs of sash, each containing 60 10 x 14 in. panes. Over each alternate bay in the roof is a skylight of ribbed glass, and the lighting is further assisted by the white paint of the interior.

Artificial lighting in high bays, over erecting floor and in the yard, Fig. 11, is by series of arc lamps with Nernst four and six glower lamps for general illumination over and under the gallery and along the central row of columns. On the outside walls over the benches Faries articulated fixtures with incandescent lamps are used, and each machine tool is provided with an incandescent lamp. The fact that excellent interior photographs can be taken at night with only the illumination named conveys an adequate idea of the completeness of this feature. A plentiful supply of Chapman light sockets is provided along the center line of columns, outer wall and in the pits.

The Tire House.

A particularly useful adjunct to the locomotive shop is the tire house, Figs. 12 and 13, with its adjacent yard for the storage of mounted driving wheels. This is located close to the section of the main building in which driving wheel work is carried on, and is a fireproof building of corrugated steel. It is equipped with a 10-ton crane, which operates within and outside of the building over the tracks in the yard. It contains also a Ferguson oil furnace supplied by the Railway Materials Company, Chicago, and of a sufficient capacity to heat a nest of eight tires at one time. For the removal of tires, a pair of mounted wheels is handled by the crane and supported by it in the ordinary fire upon the floor until sufficiently

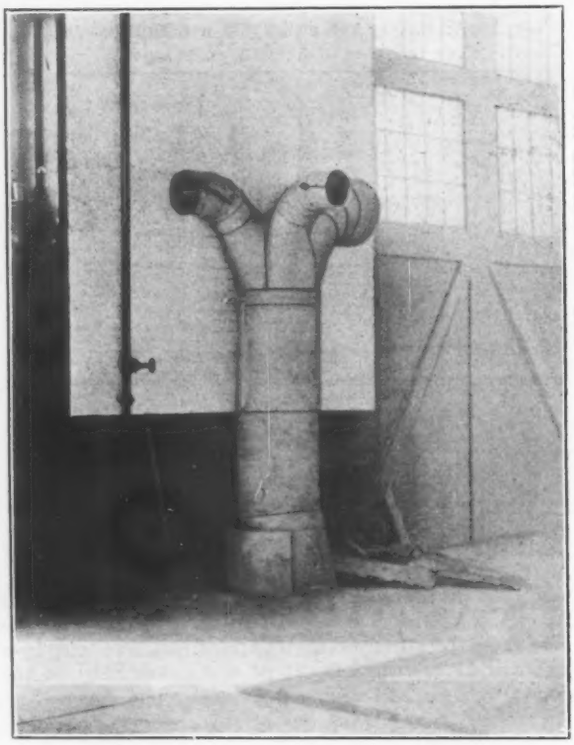


Fig. 10.—Galvanized Iron Riser from the Heat Duct for Discharging Hot Air to Heat the Locomotive Shop.

heated for removal, thus making the entire work of removing and setting tires extremely simple and expeditious.

The Lye House.

The lye cleaning house is a separate structure, and for this reason as well as its roominess, assists materially in removing some of the unsatisfactory elements of the work. There are two lye vats and two draining platforms. The vats are 10 ft. x 18 ft. 6 in. inside dimensions, and the least depth is 7 ft., the bottom sloping 4 in.

in 20 ft. Each pit has a concrete platform having a similar slope and covered with a grating of 3 x 6 in. yellow pine strips placed 2 in. upon a frame of 4 x 4 in. spruce joists. The floor not occupied by pits and platform is of macadam. The walls of the pits are 18 in. thick, and the floor is 9 in., all of concrete. The walls of the pits were waterproofed with a soft soap and alum solution. It has been found, however, that the oil from the greasy parts which were dipped into the lye has been absorbed by the walls to such an extent as to increase

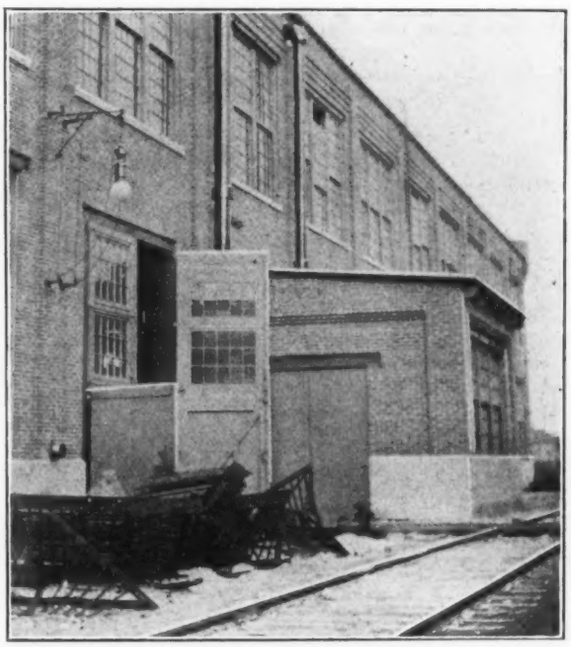


Fig. 11.—Arc Lighting on the Exterior of the Locomotive Shop.

the waterproofing. The usual steel tank inside of the lye pits has therefore been omitted. The space afforded by the tanks, cleaning and draining floors is so ample that the customary litter around this department is nowhere in evidence. The service track passes through the middle of the house between the two sets of pits and platforms.

The Blacksmith and Frog Shop.

The blacksmith shop, one end of which is fitted up as a frog shop, is unusually light and fully equipped with ventilating apparatus. The tool equipment includes McCaslin forges, Ferguson furnaces, &c., and an extension 68 ft. 6 in. long by 15 ft. 4 in. deep is devoted to locker and toilet rooms. The monitor roof is provided with swinging sash and louvres. All sash is pivoted and arranged to operate from the floor. Service tracks extend through the middle of the building, longitudinally and transversely.

Platforms.

Reference has been made to the ample supply of platform space in the yard and the dimensions of the principal ones have been given. These are all built with concrete walls and floors with a gravel filling. The arrangement of the scrap platform is shown in Fig. 14, and this illustration will suffice to show the construction of all. The covered scrap bins occupy 100 ft. of the length. The roof of this part is 3-ply Paroid roofing, and the doors are hung on Coburn trolley hangers. The uncovered portion is divided into spaces 20 ft. wide for the various classes of scrap.

The yard also contains a fuel oil storage receptacle in the form of a depressed covered pit containing steel tanks, into which the oil is taken by gravity. Oil is drawn from the tank by means of a pump provided with a pressure regulator, and the oil is distributed at a fixed pressure to all parts of the shops and is shut off automatically at a fixed pressure. The system is so arranged that at night, or when the furnaces are not in operation, all oil in the pipes returns by gravity to the tank.

Adjacent to the blacksmith shop is the iron shed, provided with the usual rack space and room for weighing and cutting at the ends. The coal shed has a concrete floor throughout, and is divided into spaces for coke, charcoal and coking coal.

The Power House.

The power house, which is on the car shop side of the plant, across the Midland Division tracks, was originally a substation, taking current from a power station belonging to the railroad company at Hyde Park, one mile away. The boiler plant consists of five 400-hp. Babcock & Wilcox boilers, four of which are equipped with Roney stokers, one being reserved for burning shavings, &c. They are provided with Sturtevant economizers and operate under induced draft. The original chimney still remains, however, and provision has been made by which the economizers can be by-passed and induced draft used, or both by-passed and natural draft used. The equipment includes Hancock injectors and Warren-Webster feed water heater, open type. There are two Worthington duplex outside center packed plunger feed water pumps, each having a sufficient capacity to supply water for the entire plant.

In process of installation is a coal handling system with clam shell bucket working on a single I-beam trolley. It is supplied by the Whiting Foundry Equipment Company, Harvey, Ill. This will handle coal from the storage to the stokers, and will also be used for the removal of ashes, the apparatus being electrically operated.

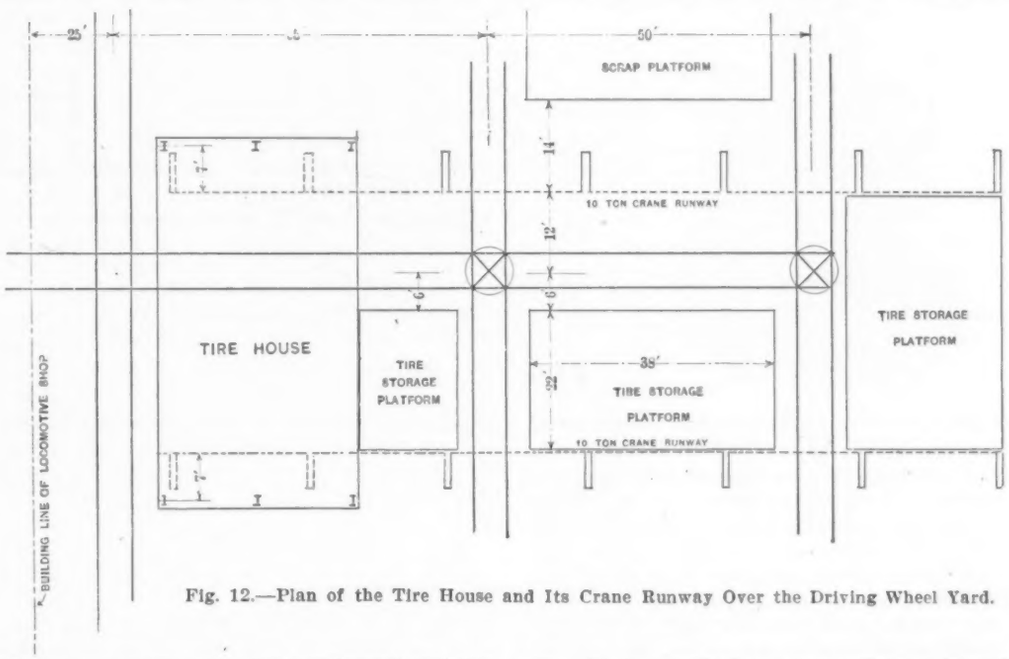


Fig. 12.—Plan of the Tire House and Its Crane Runway Over the Driving Wheel Yard.

In the engine room are three 400-kw. G. E. alternators, 25 cycles, 600 volts, directly connected to three 600-hp. cross compound nonreleasing Hamilton-Corliss engines equipped with Locke safety stops; two G. E. exciters directly connected to 90-hp. Watertown engines; one Franklin cross compound air compressor having a capacity of 1700 cu. ft. of free air per minute, supplied by the Chicago Pneumatic Tool Company; two Franklin compressors of 1100 cu. ft. capacity each; three Brush outfits for series arc lighting.

The switch board is equipped with a Tirrell voltage regulator, station watt meter and separate lighting watt meters, together with a full complement of volt meters, ammeters, switches, &c. The car shop transfer table was formerly operated with a direct current motor, but this and the motor generator set have been removed and an induction motor has been installed. In the process of remodeling the power house equipment for present purposes all 60-cycle transformers for lighting were removed and 25-cycle transformers installed. As a result of these changes all electric apparatus on both the locomotive and the car shop side now operate on 3-phase 25-cycle alternating current, the power voltage being 550, Nernst lamps 220 volts and incandescent lamps 110 volts.

All steam pipes between buildings are encased in Wyckoff sectional covering and are carried underground. As an interesting detail may be mentioned the color scheme in the various piping systems in the locomotive shop. The colors and their significance are as follows: White, high pressure steam; yellow, exhaust and low pressure steam heat; black, water, including boiler feed and feed water heater; green, air; blue, drip and return, including the Holley system; red, fire service.

All wiring, switch board and pipe work and the installation of the Holley system were done by Westinghouse, Church, Kerr & Co., H. O. Pond, engineer in charge, under the direction of the railroad company. All wiring is overhead and is carried across the Midland Division in tile conduits built into the concrete arch, affording access from one side to the other.

There are numerous other features of an interesting nature and of greater or less importance which appear from an inspection of the plant, but enough data have been given to indicate the care with which the plans and specifications were prepared and worked out in actual construction. E. H. McHenry, vice-president, has had general supervision of the design and erection, and F. K. Irwin, constructing engineer, was in charge under Mr. McHenry. S. Higgins, general manager, and the mechanical superintendent assisted in the consultation with reference to the general scheme and upon the selection and arrangement of machinery. C. A. Dodge & Co., Boston, were general contractors, and the Babcock & Wilcox Company had the contract for the boiler room, including all apparatus excepting the coal handling plant.

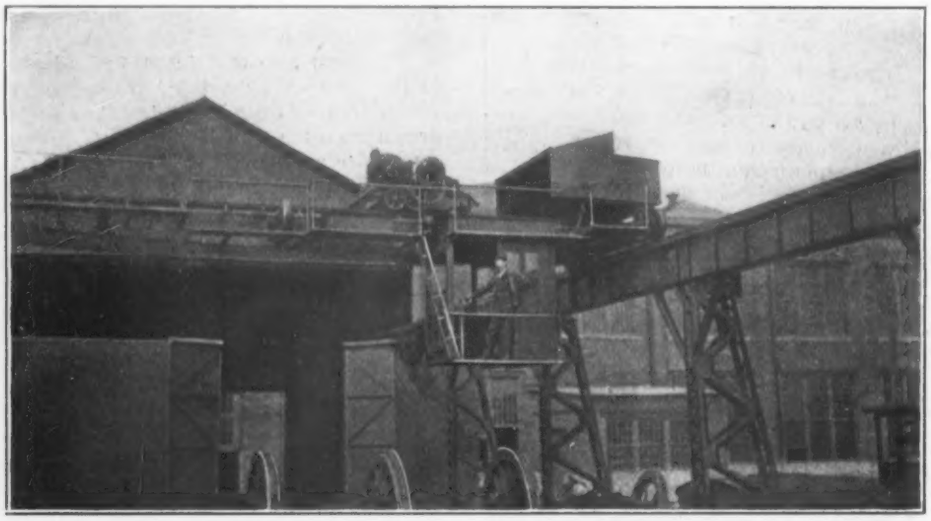


Fig. 13.—View of the Tire House and Its Crane.

During the first half of 1907 the production of steel ingots in France was 1,329,681 metric tons, compared with 1,159,146 tons in the corresponding period of 1906. Of this quantity 40,820 tons was produced by the acid Bessemer, 812,855 tons by the basic Bessemer and 467,862 tons by the open hearth process. The total output of crucible steel and of steel made by the electric furnace was only 8144 tons. The total production of finished steel was 905,412 tons, including 149,096 tons of rails, 51,691 tons of beams, 183,069 tons of various shapes, 187,312 tons of merchant bars, 169,386 tons of sheets and plates and 24,399 tons of wire.

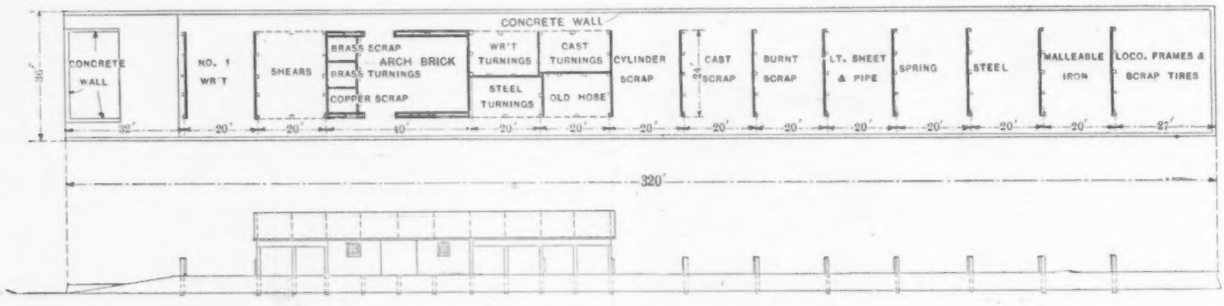
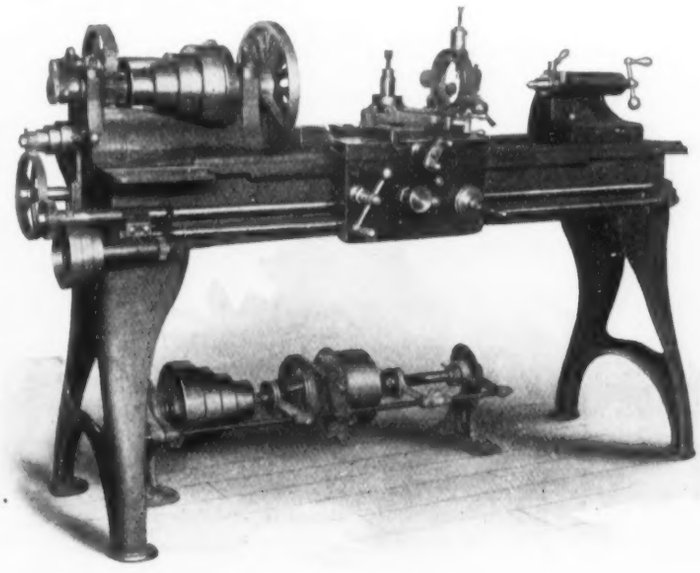


Fig. 14.—Plan and Elevation of the Scrap Platform.

The New York *Evening Post* estimates that by the close of December there will be approximately $200,000,000 more money in circulation in the United States than on October 1, this additional amount having come from banks, the Government and Europe. It is estimated that $100,000,000 has been put away in hoardings by individuals, while a large amount was taken from circulation and kept by country banks to forestall possible runs.

The Illinois Lathe.

Lathes of new design involving elaborate mechanism capable of performing varied operations with speed and accuracy quite naturally command the attention of those who follow the progress of tool development. But for all that many users of machine tools are interested in plain machines substantially built upon established lines. Such a tool, represented in the accompanying illustration, is



The Illinois Lathe.—Sold by McDowell, Stocker & Co., Chicago, Ill.

being offered by McDowell, Stocker & Co., 16-20 South Jefferson street, Chicago. While it embodies in its design and construction no unusual features that mark a distinct departure from usual practice in lathe building, it is intended to meet the needs of general service in shops requiring a plain, substantial and reliable machine for miscellaneous work.

This tool, which is known as the Illinois, is a 14-in. engine lathe, provided with back gears, rod and screw feed, hollow spindle, bronze boxes, power cross feed and gear guards. A 1½-in. bore in the head spindle permits the introduction of larger bars than is usual in lathes of this size. The swing over the compound rest is 10 in. On a 6-ft. bed the distance between centers is 3 ft. 2 in., and the drive is back geared in a ratio of 8 to 1. The spindle bearings are 3¾ x 2¾ in. in front and 2¼ x 2⅛ in. in rear. The nose of the spindle, which is 2⅛ in. in diameter by 1⅞ in. long, is threaded to take a face plate or a chuck, and is bored for a No. 3 Morse taper center. A Smith patent one belt reversing countershaft is furnished with the lathe, and when desired a taper attachment is supplied at an extra charge. The net weight of the 6-ft. bed lathe is 1400 lb.

The annual report of the Department of Agriculture, just made public by Secretary Wilson, shows that the irrigated area now under cultivation in the United States is 11,000,000 acres. The crops grown on this area in 1907 were worth $175,000,000. Next year, at present prices, this land will produce $250,000,000 worth. The total value of farm products in 1907 is estimated at $7,412,000,000, or 10 per cent. greater than the total for 1906, which was far above that of any preceding year. In the fiscal year 1907 the exports of farm products exceeded the imports by $444,000,000, a balance only exceeded in 1898, 1899, 1901 and 1902. For 18 years beginning with 1890 there has been a favorable balance in our foreign trade in farm products, the lowest being that of 1895, $193,000,000.

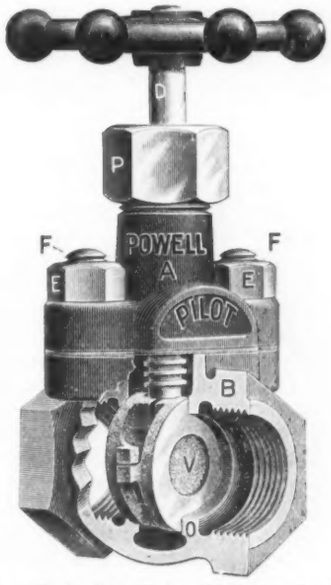
The Allis-Chalmers Company, Milwaukee, Wis., has engaged for its branch in St. Louis, Mo., a new suite of offices located at 1302-1304 Third National Bank Building, where the company's district manager, F. L. Bunton, and the salesmen of his staff will be prepared to transact business after January 1, 1908.

The Powell Pilot Gate Valve.

The Pilot iron body gate valve, illustrated, is another addition to the already large line of steam specialties manufactured by the Wm. Powell Company, Cincinnati, Ohio. Strength and compactness are characteristics to which special attention was given in its design. The iron body is built for service, and is designed with heavy lugs on either side of the neck, carrying stud bolts F. The bonnet cap A has corresponding lugs, which are drilled to a template to insure a perfect joint and constant alignment at all times, and also to allow the bonnet to be replaced without unusual care after taking the valve apart for inspection or repairs. Two semifinished hexagon nuts, E, large enough to admit wrenching down hard, with a joint of packing material between the faces of the bonnet and body, make an absolutely tight joint for all pressures up to 100 lb.

The large brass packing nut P affords plenty of room for packing material to prevent leakage around the stem. The brass stem D and the bonnet are chased and cut to a true Acme thread, which is considered the best form to resist wear. The thread is unusually long and keeps the stem in a fixed axial position at all times whether the valve is open or closed. The knobbed hand wheel affords a firm grip, even though the hands may be oily.

Instead of a single wedge, double brass disks are used having a ball and socket backing to make them adjustable. The disks are suspended from the stem by the engagement of recesses on the backs of the disks with a collar on the lower end of the stem. The disks, working in a tapering seat, expand or collapse in opening or closing, so that the valve will close down tight without straining, and will open easily, no matter what the conditions may be.



The Pilot Iron Body Gate Valve, Made by the Wm. Powell Company, Cincinnati, Ohio.

The Powell Pilot gate valve is also made entirely of iron, that is, with the disks, stem and packing nut of iron, and with no brass in its construction. This all iron Pilot gate valve is said to be very effective in controlling ammonia, cyanide solutions, acids and all other liquids or gases that attack brass.

The Schmidt Silent Drive Chain.

As a means of transmitting power, chains of the toothed type, as distinguished from sprocket chains, have taken their place with belts and gears. They have several advantages over sprocket chains in that they may be run at higher speeds; they make very much less noise, hence the practice of calling them silent chains; they divide the load over several link lengths instead of one; they adjust themselves as they stretch, retaining their full efficiency much longer, and they may be made of any width irrespective of the pitch. Unlike belts they provide a positive flexible drive on short as well as long centers, and they are less affected by dampness, grease and heat. The most recent chain of this type is the one illustrated, made by the Schmidt Drive Chain Company, 265 Broadway, New York City, and invented by Carl G. A. Schmidt, Jr. It is claimed to combine great capacity, durability and simplicity of construction and to run smoothly and silently with little consumption of power.

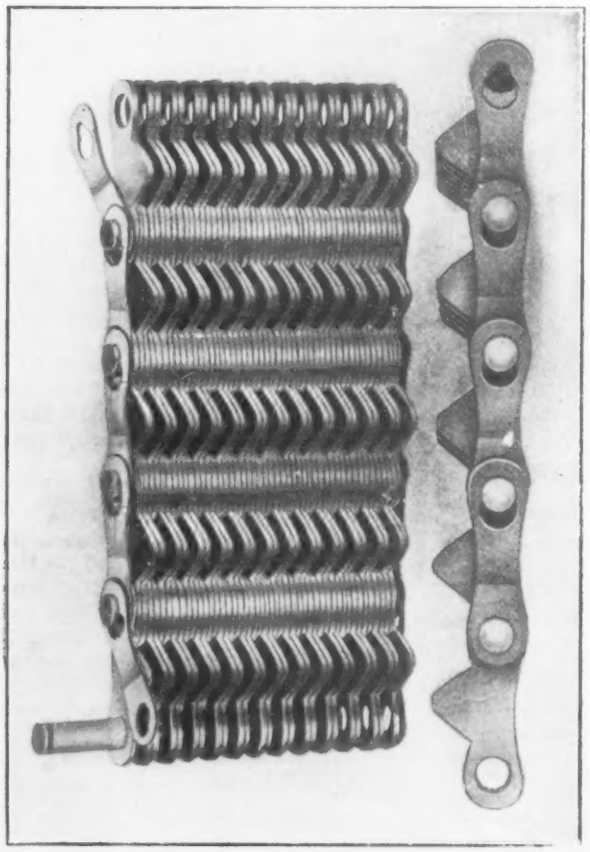


Fig. 1.—The New Transmission Chain Made by the Schmidt Drive Chain Company, New York.

The Schmidt chain consists of multiple toothed links stamped from high carbon steel, assembled on case hardened steel pins and held in position by pin retaining links. As will be seen from Fig. 1, the tooth of the link is midway between the pivots, instead of at the pivots, and the links are straight. The pull of the chain therefore exerts only a tensile stress in the link and has no tendency to bend the links and alter the pitch, even under excess or suddenly applied load. For a given load the chain can consequently be made lighter, which is believed to contribute to a higher efficiency. The chain may be applied to a wheel of almost any size, since the angles of the faces of the teeth are sufficient to cause them to clear the corners of the wheel teeth. The holes in the links are of the same size as the pins, and not larger, so that there is a large bearing surface, which does away with excessive wear in a new chain, as it is not necessary for the pin to wear itself to a full seat.

A novel and interesting means is employed for retaining the pins. The pins are not riveted, but are held by special edge links, called retaining links. These are thinner than the chain links and have one round hole and one key shaped hole, as shown in Fig. 1. As there indicated the retaining links are assembled from top to bottom, the key shaped hole being slipped over the pin and drawn down until its smaller diameter fits the circular groove in the end of the pin. The round hole may then be slipped over the next pin, and the second retaining link, being put on in the same way as before, overlaps

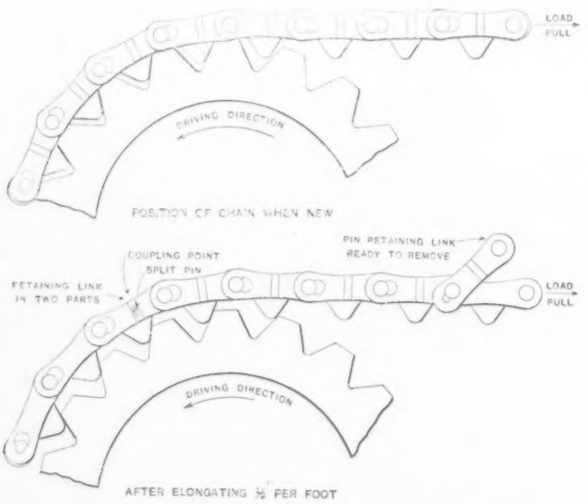


Fig. 2.—Diagrams Comparing the Relation of the Chain to the Wheel When New and When Worn.

and holds the end of the preceding link. To make the assembling endless it is begun and ended with a separable link, such as the one shown in Fig. 2, the two parts of which are held together with a split cotter pin. It is usual to insert a number of these separable links particularly in a long chain, so that it is not necessary to take off more than a few of the retaining links to replace

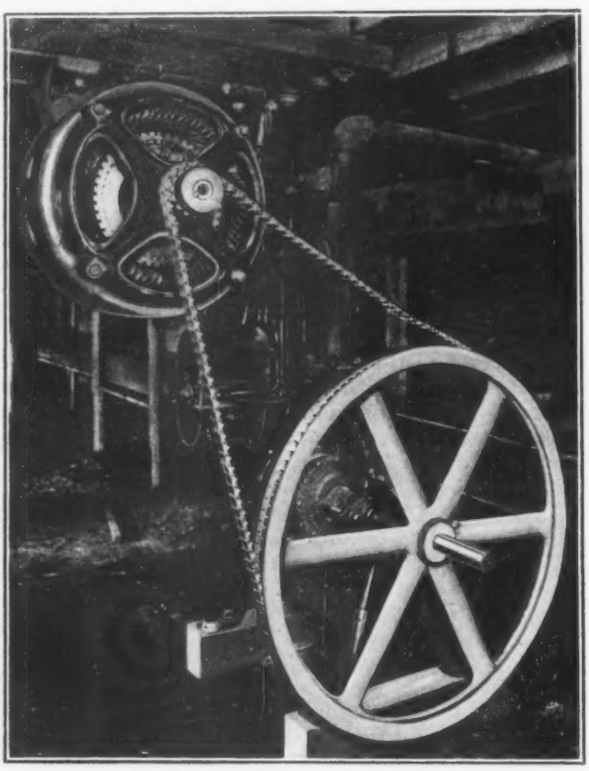


Fig. 3.—A Typical Application of the Schmidt Drive Chain.

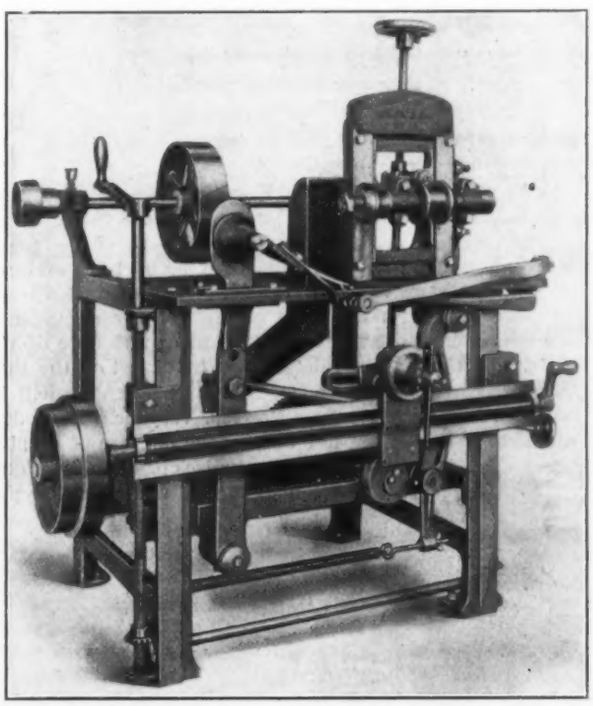
a pin or load link in any part of the chain. The use of the separable links has no effect on the strength of the chain since the retaining links play no part in carrying the load, but serve only to prevent the pins from working out. As the pins are not riveted, their ends do not require annealing; the pins therefore have no soft spots and resist wear equally their full length.

Fig. 2 is introduced mainly to show the form of the wheel teeth and the manner in which the chain adjusts itself as it wears, by riding out on the wheel teeth as the pitch lengthens. Automatically the chain adapts itself to a larger pitch circle and the original efficiency of the chain is retained and its life greatly prolonged. This illustration also shows the manner in which the chain teeth engage or leave the wheel teeth. They swing clear to or from the working contact, so that there is little friction and hence little wear from this source. The wheels have symmetrically cut teeth, which allows the chain to be placed over the wheel in either direction and makes the drive reversible. The number of the wheel teeth is limited only by the capacity of the cutting machine and very large speed ratios are possible, 20 to 1 being well within the limit.

Fig 3 illustrates an application of a Schmidt chain in a large tannery in Newark, N. J. This chain runs at a speed of 1412 ft. per min. and connects a 5-hp. induction motor running at 1130 rev. per min. to a rotary pump running at 141 rev. per min.

The Matteson Circular Saw Sharpener.

A simple, effective machine for sharpening circular metal saws with teeth of varying sizes and shapes was the object in designing the automatic saw sharpener



An Automatic Machine for Sharpening Circular Saws, Built by the Matteson Mfg. Company, Chicago.

herewith illustrated, and made by the Matteson Mfg. Company, 128-130 South Clinton street, Chicago. Although primarily intended for sharpening circular metal cutting saws, it can be used with equal facility on all kinds of circular wood rip saws. While in principle it is not a marked departure from other machines intended for a similar purpose, it possesses features of particular interest, the chief of which are the universal adjustments of the grinding wheel and the actuating cam, by which it is shifted from tooth to tooth.

The machine is belt driven from a tight and loose pulley, hidden from view in the engraving on the right end of the main driving shaft; the central pulley on the same shaft being belted to the small pulley on the arbor of the grinding wheel. The grinder is adjusted vertically by a hand screw which raises and lowers the arbor yoke in its frame, while the latter may be tilted outward through an arc of 15 degrees to accommodate the various tooth angles. A corresponding movement of the hand screw, it will be observed, is obtained by means of a link fitted with a block in which the screw terminates.

The distinctive feature of the machine is found in the construction of the cam, which automatically brings the grinding wheel in contact with the saw and controls its passage from tooth to tooth. If all saw teeth were of the same size and pattern one cam would be sufficient, but differing widely as they do in both respects, it is obvious that different cam contours are required for each variation in space or shape of teeth. To reduce the number of separate parts necessary, a four piece adjustable cam is provided, which is so constructed that practically all the usual shapes and sizes of saw teeth coming within the range of the machine's capacity can be sharpened by the use of only two such cams. Both the grinder and shifting pawl cams are mounted on the same shaft and are driven from a two-step cone pulley through a spur gear; the former cam being located back of the latter, which appears in the illustration below the cross rail in front of the machine.

Lateral and vertical adjustment are provided for the saw which is held in position on the cross rail carriage by a plain cone plug clamp for small, or a step cone clamp for the larger saw mandril holes. These are conveniently and securely locked by a notched washer and wedge pin. A long flat spring clamp serves to hold the saw in alignment. The saw carriage is raised or lowered to the proper hight by a bevel geared hand screw at the left of the machine. After each operation the saw is revolved by a pawl, which engages each successive tooth. A limited range of adjustment for the pawl arm is furnished by the slotted rocker lever having attached at its lower end a coil spring which effects a quick return of the pawls. A more extended stroke may be had by shifting the connecting rod to one of the upper holes in the pawl arm. It will be noticed in the engraving that there are two pawls shown, one of which is straight and the other slightly curved at the end. The latter is serviceable in case of broken teeth, which the straight pawl would not engage. Each tooth is finished uniform in pitch and length in one operation.

The machine is built in two sizes, No. 90, herewith illustrated, and No. 99; the former has a capacity for saws up to 38 in. in diameter, and the latter up to 60 in. in diameter. The base dimensions of the No. 90 machine are 24 by 33 in. It is 41 in. high over all, and weighs 500 lb.

Iron Cement in the Foundry.

Castings which are otherwise perfect, and are well qualified for the uses to which they may be put, often have blowholes, slight surface cracks or other blemishes detracting from their appearance but not their strength. For correcting defects of this kind a chemical compound, easily applied, was long needed. To meet such requirements the S. Obermayer Company set its chemical and experimenting department at work, and the result was a compound known as National iron filler cement. In working up this compound and making the necessary experiments toward perfecting it, it was found that several properties were essential. Such a compound should metalize practically as hard as the iron itself ; it should expand while metalizing so as to fill completely any opening into which it has been introduced, and at the same time it should force itself into the grain of the iron.

National iron filler cement, the company states, is not a new product but a perfected one. It is put up in powdered form, and the foundryman has simply to mix a sufficient quantity of it with enough water to make it the consistency of stiff putty and press it firmly into the crack or crevice. After this is done, it is smoothed over with a knife. After a casting has been treated in this manner, it can be machined regardless of the existence of any previous imperfection. The Obermayer Company can be easily reached from all sections, having offices at Cincinnati, Chicago and Pittsburgh.

The French Government has placed a large contract with the French branch of the Westinghouse Companies for equipment for the navy yards at Cherbourg and Brest. The Westinghouse Companies have also received important orders from railroads in India and for equipment for shipyards in Scotland.

Systematic Purchasing.

A Method for Collating Purchase Data and Following up Promises of Shipment.

BY W. R. KOLLER.

"Buying right" is a phrase analogous to "doing well," for it is more than likely that the house which is shrewd enough to make close purchases is also watchful enough to see that the advantage thus gained is not frittered away through leaks in other directions.

To reduce purchasing to a system that will do away with all haphazard guessing and snap judgment is, however, a matter of absolute necessity in order to maintain a uniform and consistent economy. The aim of this article is to place before the reader a concise method of recording the details of purchasing in such a manner as to render the information immediately available, and also to enable the purchasing agent to judge as to the consistency of quantities requisitioned as compared with former operations.

Illustration Fig. 1 is of a card, preferably 5 x 8 in., arranged for collating the important details of all quotations received. There is a decided advantage in tabulating the prices and conditions of quotations in this way, saving as it does a great deal of time, which would otherwise be spent in going over the correspondence. If this tabulating is done as the quotations come in, the purchasing agent is at any time in position to order to the best advantage, should it be necessary to make a quick decision. By this method it will also be easy to note if any of those quoting have failed to comply with any of the terms of the bidding, such as the submission of samples and stating of promise of delivery; that the matters of discounts, boxing, drayage and freight are clearly understood and any other points tending to affect the net result.

These "Quotations Received" cards are arranged alphabetically, according to articles or classes of materials, by the use of guide cards, as shown in the illustration. Where the number of articles is very extensive, plain guide cards may be used, on which are written or printed the names of the principal articles or materials.

Fig. 1.—Card for Recording Quotations Received, Showing the Manner of Filing Between Alphabetic Guide Cards.

The entries on the record cards may be by hand or typewriter, the latter of course being the clearer.

When the quotations are all in, and the selection is made and the order placed, the number and date of the order and the principal details are tabulated on the Purchase Record card shown in Fig. 2. This card, it will be noticed, has printed along the top, very near the edge, the figures 1 to 31. These are for the purpose of keeping track of and following up the promises of delivery. This is done with the aid of steel signals, which are clipped over the cards at the date of promise as shown, and may be moved along from one date to another as new promises are made.

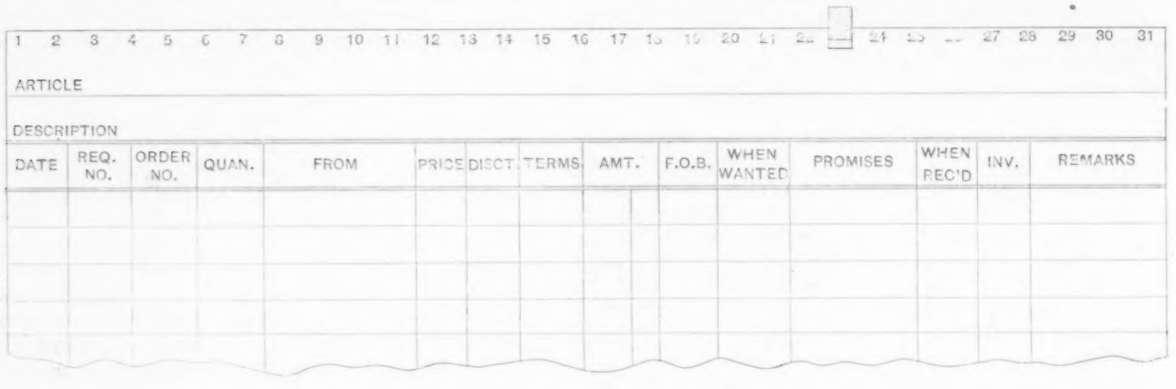


Fig. 2.—Purchase Record Card, Showing the Use of an Adjustable Steel Clip or Signal, Which Is Moved from Date to Date to Follow Up Promises of Shipment.

The use of these signals for following up promises will be found of infinite advantage, for, as all purchasing agents know by experience, it is very undesirable to allow a supply house to become lax in its promises, with the result that sometimes a period is reached on an important job when certain materials are absolutely necessary to have at hand, and if careful following up of promises is not attended to and the order urged on, considerable losses may be the result. When orders or contracts for materials placed extend over a long period of

time, with reference to their completion, signals of different colors may be used to designate the months.

The position of the signal at the top of the card indicates that action is to be taken on that order on that particular date. All orders on which promises fall due or which require attention on the same date will, of course, have the signal in the same position, and all that is necessary each day is to refer to the cards on which the signal is fixed at that date. These will, of course, all be in the same relative position, one behind the other. This Purchase Record card is therefore of great importance in determining how various firms keep their promises and to just what extent they may be depended upon in an emergency.

When orders are sent out before obtaining a promise of delivery, as is very often necessary, it is well to send along a return postal card, Fig. 3, to be used in acknowledging the order and requiring the recipient of the order to state a definite date of delivery.

The system here described should take very little time

DATE _____ 190__

WE ACKNOWLEDGE RECEIPT OF YOUR ORDER NO. _____

WHICH WILL BE SHIPPED _____

_____

THIS HAS BEEN ASSIGNED OUR ORDER NO. _____

_____

_____

_____

_____

Fig. 3.—Postal Card Acknowledgment of Order Form, to Be Inclosed with Orders.

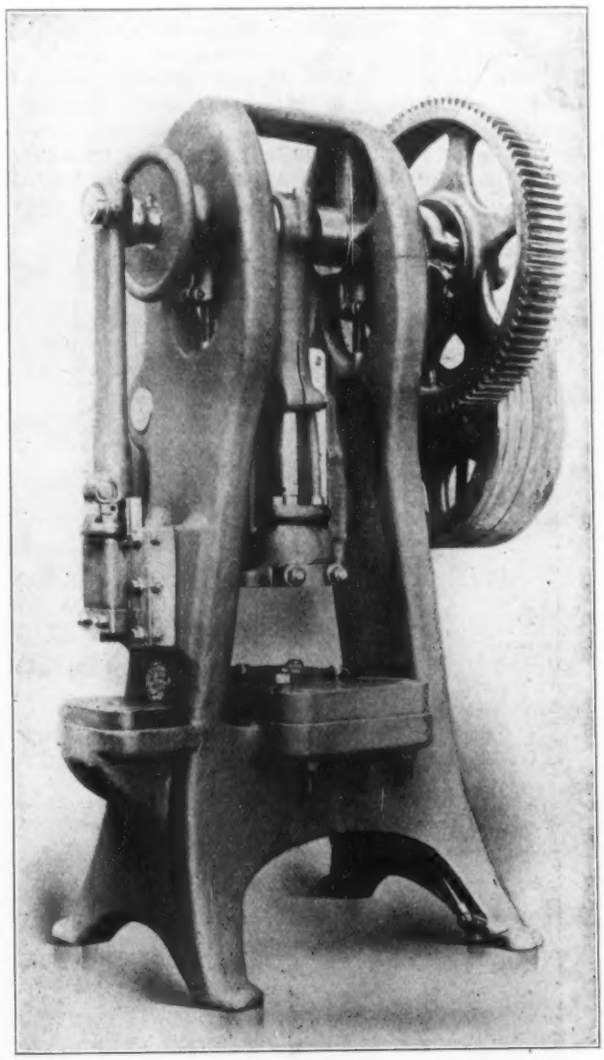
to keep up, but it is of the greatest importance that it be followed up methodically each day, for if promised dates are allowed to pass without attention its reliability will be at an end.

A Ferracute Deepening Press with Side Punch.

It is not always advisable to combine several functions in one machine, but it frequently happens that attachments can be applied to increase the capabilities advantageously. The machine illustrated is one built by the Ferracute Machine Company, Bridgeton, N. J., that shows how a certain type of press can be used for several purposes at the same time. It is known as press DG 76 with side punch, and is the largest of a series of six sizes designed primarily for deepening shallow shells, but also well adapted for bending and forming to shape, pedals, handle bars, parts of agricultural machinery, automobiles, &c., which need a heavy press with long stroke. A swinging head can be attached if needed for unusually deep work. When made with comparatively short stroke it has been found useful for trimming drop forgings, and for this work may be provided with an auxiliary side ram as shown in the engraving. This makes it convenient for certain classes of work, including punching, shearing and cutting, by means of upper and lower chisel blades set in the ram and bolster, respectively.

The straight line frame insures stiffness and rigidity, the distance between shaft journals being only sufficient to admit the ram mechanism, a construction that reduces the spring to a minimum. The special advantage is that while one operator is using the main press, another can work at the smaller side punch without interference.

The hight from the bed to the ram when the latter is up is 20½ in., and the adjustment of the ram is 3 in. The standard stroke is 10 in., but it can be made from as small as desired up to as much as 20 in. The stroke of the side ram is 2 in.; its adjustment 3 in., and the greatest hight from the bed to the side ram 10 in. The width between columns is 30 in. The flywheel is 40 in. in diameter by 7 in. face, weighs 1100 lb., and runs at a speed of 180 rev. per min. The pressure exerted by the



An 84-Ton Deepening Press with Auxiliary Side Ram, Built by the Ferracute Machine Company, Bridgeton, N. J.

main ram is 84 tons. The press is 10 ft. high, occupies a floor space of 7 x 5 ft., and weighs complete 14,000 lb.

The report of the Bureau of Manufactures at Washington for the year ending June 30, 1907, gives the value of manufactured products in the United States in that year as $14,802,147,087. The value of domestic merchandise exported was $1,853,718,034, an increase of nearly $135,764,652 over the preceding year. The aggregate value of manufactures exported in the year ended June 30 was $1,085,991,403, or more than 58 per cent. of the entire exports for that year. In view of complaints from abroad, the bureau has been in correspondence with managers of railroads and ocean steamship companies to secure more reliable and rapid transit for merchandise destined to foreign countries. What is needed is a system by which carloads of merchandise consigned to foreign countries when started shall be kept moving continuously toward destination.

The Graton & Knight Mfg. Company, Worcester, Mass., has been awarded a gold medal for its exhibit at the Jamestown Exposition of Neptune waterproof leather belting, the chief feature of the exhibit being leather belting running in water. The company states that this brand is the pioneer of waterproof leather belts, now having been on the market for five years. In its shoe counter department, known as the Worcester Counter Company, it was awarded a silver medal for its display of shoe counters and insoles, this being the highest award made.

The Alliance Electric Floor Charging Machine.

A new electric turret type furnace charging and drawing machine, remarkable for its great adaptability, brought out by the Alliance Machine Company, Alliance, Ohio, is herewith illustrated. Fig. 1 shows the machine in the act of charging a beam blank into a reheating furnace, and Fig. 2 shows the machine picking up a beam blank from the floor. In the mill where this particular machine is installed the reheating furnaces are located between the roughing mill and the finishing mill on a longitudinal center line. The furnaces have been completed on one side only, as shown, but another line of furnaces will be built on the opposite side, so that the machine will run between two lines of furnaces and serve them all. Ordinarily hot beam blanks are received from the roughing mill and at once charged into the reheating furnace, but to provide for charging cold blooms or blanks, which may be piled up on the floor at the end of the roughing tables, the machine is so designed that a bloom or beam blank can be picked up from any point on the floor.

The machine is extraordinarily active, as is necessary in this class of work, and to permit the operator to run all motions at the highest speed and then stop the motions very quickly, careful attention was given to the design so as to produce a machine that would safely withstand the shocks and jars incident to such operation. The machine has a record of charging 60 cold billets and drawing 60 hot billets and delivering them to the finishing mill tables 75 ft. away in 45 min.

Throughout the machine is designed with a view to accessibility, strength and durability. The girders and end carriages are of structural steel box construction, and are framed together so as to render any twisting or racking of the bridge impossible. Both girders and end carriages are designed with a factor of safety far in excess of the usual crane construction, both in the net section of the material and in the size and spacing of the riveting. The trolley frame is a combination of structural and steel castings; no iron castings are used in machines of this character. The trolley runs on rails located on the main girders, with guard rails at the top. The current is carried to the machine through the center of the trolley, and thence to the controllers located at the back of the revolving boom.

The boom is arranged with a tilting motion, but the operator's platform is stationary in this respect. The tongs are of the double grip type, and open from 12 to 30 in.—a range wide enough for the average variations of work to be handled. The machine has five motions, each of which is driven by an independent reversible motor. These are the bridge travel, the trolley travel, the revolving of the boom and the gripping and releasing of the tongs. The machine illustrated has a rated capacity of 4 tons, but it can be made in any size and to suit any particular location or work.

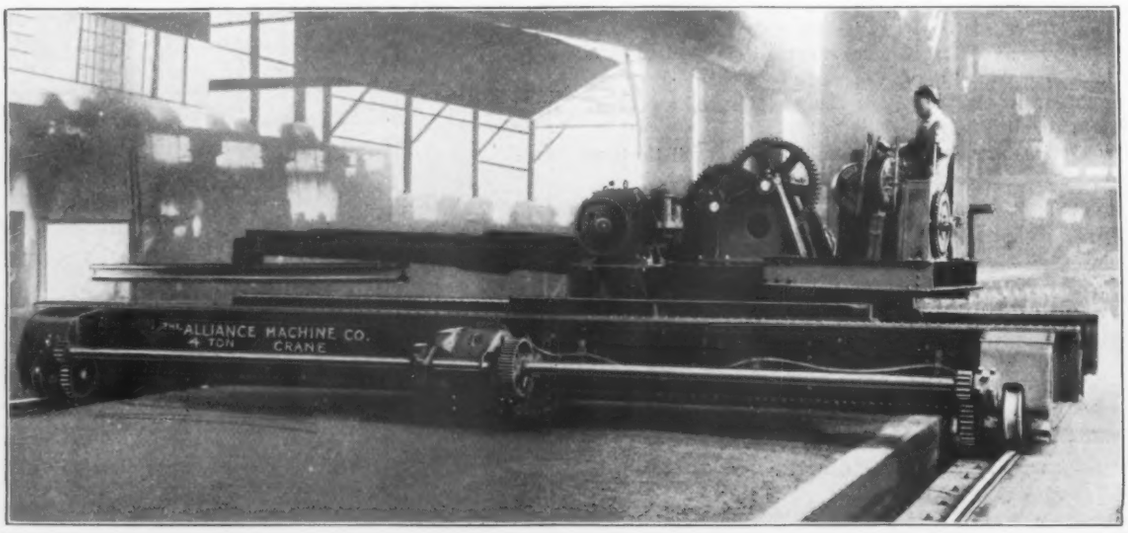


Fig. 1.—Drawing a Beam Blank with the Electric Floor Charging Machine Built by the Alliance Machine Company.

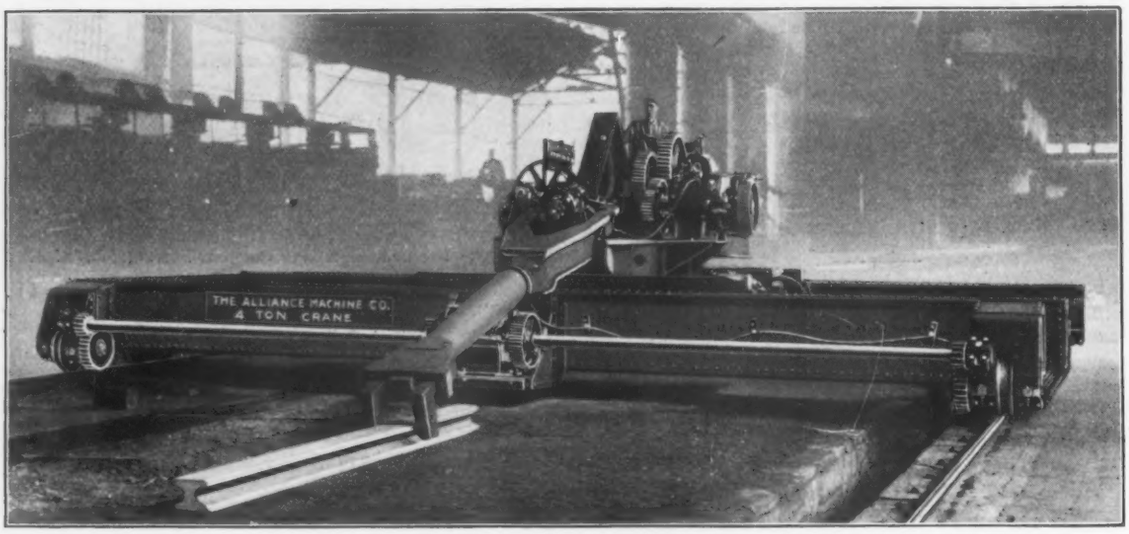
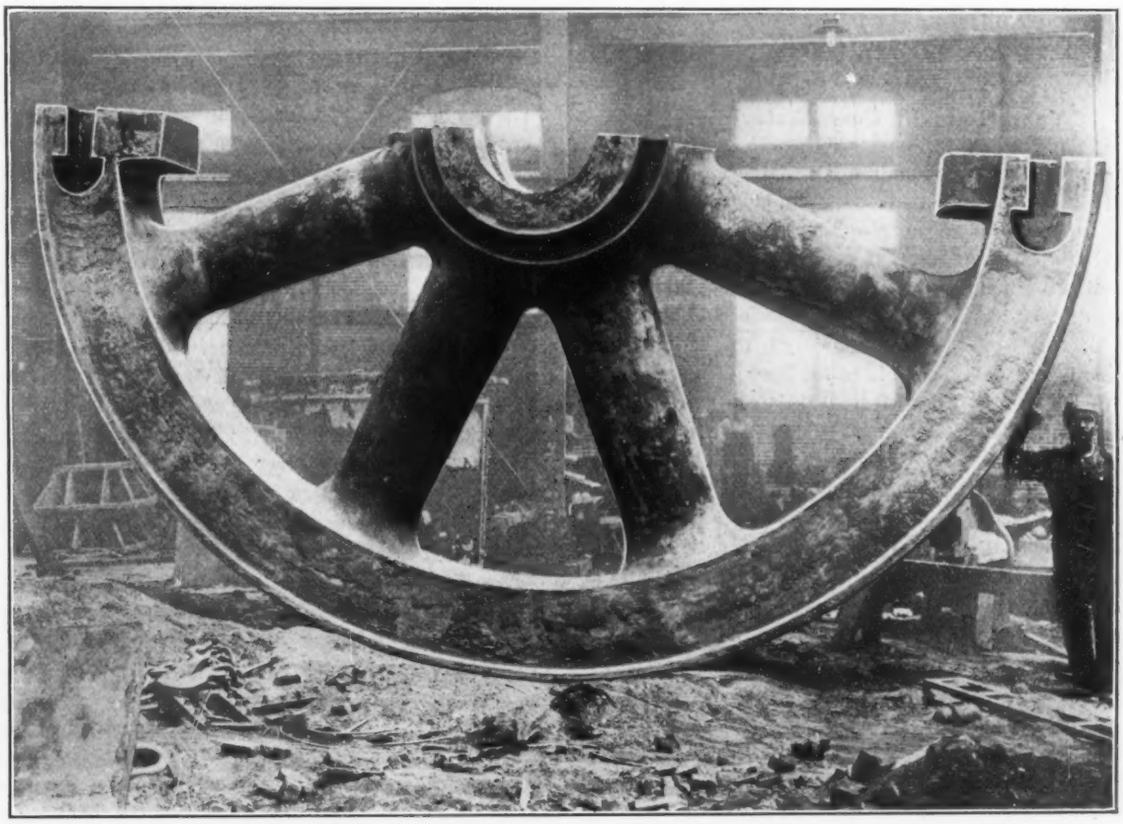


Fig. 2.—The Alliance Electric Floor Charging Machine Picking Up a Beam Blank from the Floor.

The Gayley dry blast plant built by Guest, Keen & Nettlefolds, Ltd., at Cardiff, South Wales, has been completed, and dry blast was applied to one of the furnaces a few weeks ago. The plant was built under the design and supervision of Frank C. Roberts & Co., Philadelphia, Pa.

The Largest Castings Made in the South.

The Payne & Joubert Foundry & Machine Company, Birmingham, Ala., recently shipped to the Nordberg Mfg. Company, Milwaukee, Wis., the casting shown in the accompanying illustration. It was the last section of two flywheels that were cast in the foundry of the Birmingham company and shipped to Milwaukee. The casting shown is the largest ever made in the Birmingham District, and probably the largest of its kind ever made in the South. It weighs 80,000 lb. The two flywheels weighed in the rough 160,000 lb. each, and were 20 ft. in diameter, 28 in. face and 28 in. bore. They were made and delivered within 60 days of the receipt of the order. The four castings were all without flaw. In pouring it



An 80,000-Lb. Flywheel Section.—One of Four Representing the Maximum Weight Yet Reached in the South.

was necessary to take two heats from the cupola, the first heat being kept hot in the ladle by covering with charcoal, while another heat was being melted. The two ladles of iron were then poured at one time.

Atlantic Inland Waterways.

The Atlantic Deeper Waterways Conference was held at Philadelphia, Pa., November 20-21, with 522 delegates present, representing 17 States. The results were more satisfactory than was anticipated by any of the enthusiasts, and progress appears to have been made that should result in bringing about the much needed deepening of the waterways of the East. One vice-president and one delegate have been appointed from each State having membership in the association, and it is the intention to have this entire body attend the National Rivers and Harbors Congress at Washington, December 6.

One of the most important features brought out was the fact that the opposition of the railroads, which hitherto has proved the greatest stumbling block in the development of inland waterways, was not only rapidly disappearing, but that many of the greatest railroad corporations are ready to aid in the movement. The statement was frequently made that the railroads realize their inability to keep up with the tremendous growth of the country, and are willing that waterways should be developed to aid them in handling the commerce.

Charles Heber Clark of Philadelphia gave a detailed description of the proposed route. The proposition is to cut through four necks of land, an aggregate distance of about 66 miles, and construct a great inland tidal waterway 800 or 900 miles in length, stretching from the cotton fields of the Carolinas to the cotton mills of Massachusetts. The middle link is the Delaware River, the second largest of our rivers running into the Atlantic Ocean, but, from the standpoint of productive interests the most important. The project is to extend the Delaware southward to the northern boundary line of South Carolina; then northward to New York and through Massachusetts Bay. Finally, that it shall be thrust upward to Albany and through the Erie Canal. The population of the cities along the proposed route is about 9,000,000. The States to be affected include about 29,000,000 people.

Major Flagler of the Government Commission of Surveys said there was nothing from an engineering standpoint to prevent the construction of a ship canal from Beaufort, N. C., to Norfolk, Va., and across the Maryland-Delaware peninsula, and stated that the cost would probably be $35,000,000.

The following were among the resolutions adopted:

Resolved, That, as a primary movement, the opening of ship canals and deepening of intervening rivers and approaches from Norfolk, Va., southward to Key West, Fla.; from Chesapeake Bay to Delaware Bay, and from the Delaware River to the Raritan River, and across Cap Cod at the most favorable point, are demanded by the commercial interests of 30,000,000 people on the seaboard, directly and indirectly, and ultimately by those of the remainder of the American people.

Resolved, That the canals should be dug in any case by the Federal Government; first, because the Government alone has the authority over navigable waters; second, because all the canals should be free, but chiefly because the enterprise planned in the interests of peace will have incalculable value for the whole nation in time of war.

A permanent organization was effected under the name of the Atlantic Deeper Waterways Association. The membership is to consist of commercial, manufacturing and kindred organizations, district waterway improvement associations, municipal and other corporations, companies and individual citizens. The president is J. Hampton Moore, Philadelphia.

THE IRON AGE

Established in 1855.

New York, Thursday, December 5, 1907.

Entered at the New York Post Office, as Second Class Mail Matter.

DAVID WILLIAMS COMPANY, - - - - - PUBLISHER
14-16 PARK PLACE, NEW YORK

DAVID WILLIAMS, - - - - - PRESIDENT
CHARLES KIRCHHOFF, - - - - - VICE-PRESIDENT
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Variations in Raw Materials.

Irregularities in raw materials and the need of standards to govern transactions between blast furnace and steel companies and those from whom they buy were discussed at the recent annual meeting of the Cleveland Institution of Engineers at Middlesbrough, England. The presidential address contrasted the absence of specifications for ore, coal and limestone with the exacting requirements the steel maker is called upon to meet. Himself a steel maker, President Ridsdale considers that standardization of raw materials will have to come if progress is to be made in finished products. The steel maker he regarded as in a particularly difficult situation in having to bear the irregularity in the quality of his fuel and ore on the one hand and the exactions of his customers on the other. The speaker cited coal as an example of wide fluctuations. While the product of some mines was quite uniform day after day, in other cases a coal will have, say, 5 per cent. ash for 10 days and then suddenly double or treble this percentage. As the steam goes down under poor coal cost of product goes up, and as output is cut tonnage men make less by 15 to 20 per cent. than would be possible with the customary fuel.

In the case of iron ore, it was pointed out that if the ore furnished varies only 2 per cent. from the normal iron content—referring to the lower grade ores of the Cleveland District—the cumulative loss may reach a high figure.

Deterioration of quality of ironstone through less careful working on a works using 200,000 tons per year is serious. If it only falls from 28 to 26 per cent. iron, this means in round figures that instead of 100 parts normal stone only 93 parts are received, and 7 parts extra shale, &c., diluting it and requiring limestone to flux it. This is a direct loss (through iron not received) of 4300 tons of pig, besides extra loss through irregular working of blast furnaces. To get the same output, besides much extra limestone needed and slag produced, more coke must be burnt and blast blown, and more weight in the proportion of 100 to 93 has to be shunted, lifted, calcined, wheeled, &c.

In the United States the producers of the raw materials of the iron industry have no such exemption from regular compliance with specifications as seems to be prevalent in Great Britain. The Lake Superior ore trade, for example, has long been on a strict contract basis, with penalties for deficient iron content or excess phosphorus. Doubtless furnace companies will contend that these deductions, while properly prorating the cost of the deficient elements, are still inadequate when account is taken of the increased use of fuel and flux, the increased blowing power and the higher handling cost per ton of iron produced. However, the lake iron mining industry is now at such an advanced stage of development that any wide variation from the contract guarantees is the exception. The sorting of ore and the separation of the various grades are now so well provided for that producers have no hesitation in tying themselves up to stringent guarantees. In the South much is yet to be done in this direction, however. Outside of the large companies there, ore is either purchased in the market or mining is done under contract at a price per ton. One example of the latter arrangement is recalled in which the financial difficulties in which a furnace company became involved were due in part to the amount of rock and dirt delivered to the furnace by its ore contractor.

In this country, however, the very large proportion of our iron and steel production turned out by large companies, owning their own supplies of iron ore, coking coal and flux, makes the question of irregularity in raw materials one of constantly lessening importance. These integrated concerns have made important progress toward uniformity in the supplies furnished their blast furnaces by their raw material departments. On the other hand, the blast furnace managers have their problems. While they may not suffer from serious fluctuations in the quality of material furnished they are often hampered by the fact that their ores and fuel are regularly less desirable than they might secure if they were drawing upon the general market. The steel works manager in the large integrated company may be even more of a sufferer from irregular material than the blast furnaceman, since he must take the furnace product as it comes, whether regular or off grade. If his company supplements its own iron supply by buying in the market he has occasional recourse upon the merchant furnaceman. He can specify a higher silicon Bessemer iron, for example, if the furnaces of his own company have been straining for low fuel records.

The difficulty of establishing standards for coal and of securing the conformity of sellers presents even more of a problem than that of ore. In the case of coke, while analysis is the basis of sales, there are frequent disputes between buyer and seller over alleged departures from the agreed basis, the foundry buyer in particular finding occasion for such complaints. With the blast furnaceman physical irregularities are a fruitful source of trouble, the breaking up of some cokes and the resulting dust making them expensive even at concessions from the market. Steam users in the United States have some promise of relief that does not seem so imminent across the water. The work of the Government in establishing specifications for steam coal has already resulted in the introduction of its standards in industrial lines, and the movement is naturally co-operated in by miners of high grade coals.

The elimination of irregularities in materials and processes is the line on which large economies in iron and steel production are yet to be won. Dry air for blast furnaces is a notable example. Other contributions may be expected from more careful mining and sorting and from proper preparation of material for the blast furnace and coke oven.

International Iron Trade Influences.

When it is considered that the effects of the recent financial panic on the industries of the United States are at this time a subject of widely varying conjecture, it is not surprising that authorities on European finance and industry are puzzled to measure the consequences of these troubles in their respective countries. That Continental bourses have been quiet in the face of the developments in this country is but natural. Uncertainty as to what may happen in the international money situation

has prompted great caution in making engagements. So far as the iron trade is concerned, the signs of recession have been visible in Germany for some time, though the strong hand of the Steel Syndicate is visible in the very gradual and thus far comparatively slight yielding of prices. With the expectation that the present basis for ore will prevail there through the first half of 1908, with the recent prolongation of the Upper Silesian Pig Iron Convention for another year, and the preservation of high level coal prices under well sustained demand, while railroads continue to make very satisfactory showings, no abrupt transition to slack conditions is to be looked for. The Belgian steel trade is feeling German competition increasingly, which is one of the conclusive signs of the change that is under way.

In Great Britain stocks of iron continue to decrease in spite of the cutting off of American demand, and while prices are weaker and the outlook is considered less promising, the change is by no means pronounced, and fears of American and German competition in iron and steel products are by no means an obtrusive factor. The low pig iron stocks in all the leading producing countries of the world are still a significant feature, in connection with the disposition in the United States, well understood abroad, to bring production in close relation to requirements, whatever degree of curtailment that programme may impose.

Unquestionably the attitude of the leaders in the steel industry on this side has had a steadying influence upon British and Continental markets that has not existed in any previous period of readjustment in the United States.

Improving the Nation's Waterways.

The country has grown faster than its railroad facilities, which are inadequate under more than normal demand upon them. The financial problem of the extension of the facilities of railroads is so formidable that there seems to be no immediate prospect of their catching up with the needs of their customers. One important result is the greatly increased attention which is being given to the subject of the nation's natural waterways and connecting channels of navigation, that water carriers may play a more important part in trade and commerce, relieving the overtaxed condition of many railroads, and at the same time giving lower rates than railroads can afford. A gigantic work is to be done before navigation can be developed to its maximum efficiency. The ultimate cost to the Government, if such work be undertaken, will reach a figure beside which the item of the Panama Canal will seem insignificant. But the question is not one of initial cost, but of results. Would the improved waterways pay a fair percentage of profit on the country's investment?

The associations which have organized to take up the several branches of waterways believe that the nation would be a gainer far beyond the returns upon any ordinary investment. The National Rivers and Harbors Congress, now about to assemble at Washington, will in its platform urge upon Congress a broad and comprehensive policy, built upon definite and well defined plans, with a regular annual appropriation of $50,000,000 for river and harbor improvements, replacing the constantly changing policy resulting in appropriations of varying amounts made at irregular periods. The concentration of effort will probably be advocated, with the expectation of accomplishing work quickly, instead of dragging along numerous enterprises through periods of years. The permanent organization of the Atlantic Deep Waterways Conference, effected at the recent meeting in Philadelphia, is another effort to influence the country toward improvements in navigation, the special work in hand being the establishment of an inland waterway along the Atlantic Coast from New England to the Carolinas—an old plan, the accomplishment of which would serve to bring the interests of the North and South in closer touch, to their mutual financial betterment. The beginning of this route is already made on the site of the proposed Cape Cod Canal. Thence the route would be Long Island Sound, the Raritan Canal, Delaware River, Chesapeake and Delaware Canal, Chesapeake Bay to Norfolk, the Elizabeth River and a cut across Virginia to Currituck Sound; Coanjock Bay, a cut through North Carolina to Albemarle Sound, and thence through Croaton and Pamplico sounds to Neuse River. The deepening and widening of local creeks would end the route at Beaufort Inlet and the ocean.

The Inland Waterway Commission is in session at Washington considering a plan for the development of waterways looking toward the restoration of navigation on the Mississippi River and other waterways of the country, giving special attention to the lake-to-the-Gulf channel already begun. The commission will report to the President, outlining its ideas of the general question.

Doubtless the great enterprises included in the plans of the advocates of improved waterways will be eventually carried out; of many of them the beginning has already been made. It is easy to see where the lakes-to-the-Gulf channel will be of enormous commercial advantage to the country. The inland waterway along the Atlantic Coast would effect a vast saving annually for shippers, and would shorten the distance for transporting in vessels, to say nothing of decreasing the losses resulting in the sailing of the open ocean. There would doubtless also be an important advantage to be realized in the nation's defense against an enemy. Other improvements on a large and expensive scale will add to the wealth producing capacity of the country, notable among them the establishment of a deeper channel in the Ohio River and its tributaries. But great plans should be carried forward deliberately, with a continuous policy, established after investigation by the most competent engineers. The idea of concentrating effort, accomplishing great works a few at a time, continuing appropriations upon them until they are complete, and then taking up others in their turn, seems a good one. In the work of river and harbor improvement the weakness of the Government, born of Congressional constituencies, has been to spread the appropriations over too great a territory, requiring long periods of years before individual works are brought to a point to make them of real value.

A Labor Conspiracy Precedent.

An English court has established the important precedent that there is no actionable conspiracy on the part of an association of employers in refusing to give employment to a workman who has voluntarily left the employ of one of the members at the instance of a labor union on the ground that the shop was "unfair." The case is that of Bond *vs.* the Leicester District Engineering Trades Employers' Association, and is brought to recover for alleged conspiracy to prevent the plaintiff from obtaining employment. Bond was a member of the Molders' Trade Union, and for 28 years had been employed by Ashwell & Nesbit, Ltd., prior to March, 1907, when he gave notice that he would terminate his employment. It was admitted that he left because his

union asked him to do so, for the reason that the union had placed the shop on the unfair list. His employers were sorry to lose him, and offered to make him a foreman at advanced wages if he would remain.

The defense asserted that there was no animus on the part of the employers; they were satisfied with his work and sorry to lose him; and claimed as a matter of law and as a matter of right that the masters had the right to agree together whom they would employ and whom they would not employ, and that all that had been done in this case was that a voluntary association of employers had agreed to act in concert. A member of the association to whom Bond applied for work asked Ashwell & Nesbit whether they would object to his employing Bond and the reply was, "That is a matter for your own consideration." Another member of the association who employed Bond and then discharged him testified that he did so because he thought the action of the union was tyrannical and arbitrary. It was frankly stated by the secretary of the association that with the exception of Ashwell & Nesbit all the members of the association had agreed not to employ the plaintiff. The latter firm was and still is ready and willing to employ the plaintiff, who had been in that establishment as boy and man for 28 years. The plaintiff's counsel argued that "the law of England is that a man is entitled to follow his occupation where he wishes, and to serve what employers he chooses, and no one has the right to take such steps as will force him eventually to go back to a particular employer who desires his services."

The court, in summing up the case for the jury before which it was tried, stated: "A man has a right to let his labor to whomever he desires. An employer may refuse to employ a man. A master may say he will not employ a workman who has been led to resign his prior employment by his trade union, or he can refuse to employ a man who may possibly still go back to his former employers. As to the position of the plaintiff, you must decide if he was acting as a free agent or as a mere pawn in the quarrel between these two unions, of men and employers." The action failed.

The case is the more important to American employers because it is easily possible that an analogous situation might arise in the United States. It is an interesting factor in the suit that the original employers kept the place open for Bond, while their fellows in the association declined to employ him. But the essential feature is the fact that with an agreement by the employers' association not to employ a workman because he was called out of his former place by a union, the agreement being acknowledged, the right to its execution remained unchallenged by the law. That the plaintiff Bond "was a pawn in the quarrel between the two unions" is a matter worthy of consideration.

CORRESPONDENCE.

A Stove Manufacturer's Views on the Financial Crisis.

To the Editor: It is a matter of history that financial crises have occurred at more or less regular intervals in the past in this country as well as other commercial countries under widely varying kinds of government and currency laws. I do not believe that crises come with the regularity of the tides or are regulated by astronomical conditions as some writers would have us think. Economists tell us that one of the fundamental causes lies in national and personal extravagances. When we consider the largely increased importation of articles of luxury, such as diamonds, fine wearing apparel, foreign rugs, &c., and further the hundreds of millions of dollars spent by American tourists, together with countless more millions in bric-a-brac, antiques and famous works of art during the last few years, we cannot ignore the fact that this cause is one factor of the present situation. We have purchased millions of dollars' worth of automobiles the last few years—a plaything, a luxury that produces no new wealth. We have a worldwide reputation of being the biggest gamblers, the greatest speculators and the biggest spenders of money on earth.

Another quite evident cause is the converting of liquid capital into fixed capital. If the farmer puts his capital in raw land, having none left to make it productive of value, he is land poor; he has not spent his money wisely. Without food, tools and stock to make his investment productive, he can do nothing but liquidate. We have tied up vast sums in factories, machinery, mines and numerous other enterprises that may not be immediately productive. We are like the farmer and the land. We have put too much in our plants and depend too much on our ability to borrow funds for operation.

Another cause, and one which I consider of especial prominence in the present case, is the disturbance of the relation of the value and price of the great staple commodities of exchange. For example, in 1897 pig iron was $10.50 a ton; in 1907, $26, or 25 per cent. advance. On the other hand, a cook stove made of pig iron did not advance over 20 per cent. in that time. The relation between the cost of living and wages, the cost of raw materials and labor and the profits of the manufacturer has been disturbed and disarranged till a readjustment was absolutely necessary. If just enough of all commodities were produced each year to meet the demands of consumers we could hardly have a crisis worth mentioning, which is, when all is said, only a readjustment of values.

The bankers' panic, as incident to the present crisis, together with the hoarding of currency all over the country, is the worst feature, the one that does the most harm to legitimate business. It hurts the farmer and the laborer as well as the banker and business man. I believe it unnecessary, and think it could be avoided by the authorization of an emergency currency guaranteed by the entire bank assets of the country, and further secured by approved stocks and bonds at actual value, carefully and rigidly appraised. An issue of such currency should be large enough in volume, and be held in readiness to be put out quickly enough to stop a bank panic at its inception, with such a system of graduated and increasing tax as to insure its immediate retirement when the emergency is over. Something of the kind can be devised to prevent the most disastrous feature of a financial crisis.

The principal cause of a crisis, and in the present one the immediate and dominant factor, is without question the stupendous issue of stocks and bonds with an expansion of credit in proportion to the inflation of values. We don't need the facts exposed by the insurance investigation, the Alton Railroad deal, traction scandals or exposures of criminal acts of bank officials to show the methods of inflation and unsound finance. We, in business, have seen industries purchased and combined with other similar purchases to reappear under a new name with a capital of stocks and bonds at 10 to 20 times the real value. We have seen these same stocks and bonds manipulated to par value on the stock exchanges of the world.

The day of retribution is now at hand. We are going to take stock, readjust values, and start all over. The President of the United States is fundamentally right in some of the legislation he is recommending. We must have a national incorporation law that will protect the small stockholder and investor. We must have a postal savings bank system. We must have a sane revision of tariff free from political influence. The quicker we get busy and help the quicker we will again have a period of healthy financial progress.

E. C. COLE,
President Cole Mfg. Company.

CHICAGO, ILL., November 25, 1907.

Republic Iron & Steel Company Finances.

The Republic Iron & Steel Company has issued in the past week a statement of the results of its operations in the four months ending October 31, the last annual report having been brought down to June 30, 1907. The additional information is given out, it is stated, "in view of the present financial conditions." A statement of income account is given for the four months from July 1 to October 31 in 1906 and 1907, the comparison being as follows:

	Four months from July 1 to Oct. 31, 1907.	Increase.	Decrease.
Net earnings after deductions for maintenance and repairs	$1,942,143.07	$715,646.82	.....
Add other income	45,655.59	.....	$29,727.13
Total profits	$1,987,798.66	$685,919.69	.....
Less interest on bonds and collateral trust notes and other charges	334,770.53	.....	36,401.32
Net earnings	$1,653,028.13	$722,321.01	.....
Less dividends paid on preferred stock October 1	*357,295.75	.....	.....
Net addition to surplus	$1,295,732.38	$1,130,659.01	.....

* $765,633.75 paid October 1, 1906.

Chairman John A. Topping, in presenting the above comparisons to the stockholders of the company, comments as follows:

Your general inventory of materials and supplies shows some increase since July, due to the fact that it is necessary to bring down during the season of navigation, or prior to the winter months, the annual supply of iron ore. Aside from this item, the general stocks of other materials and supplies are light, and the values at which these stocks are carried on your books are at or below present market values. Even in the event of any reduction in market values, your shrinkage account cannot be an important item.

The amount carried in accounts and bills receivable is large, due to recent trade activity and influenced somewhat by the deferred payments of customers, caused by existing conditions. The total amount of doubtful accounts is small, and your guarantee fund is more than ample to take care of any probable losses. November collections, under existing conditions, have been surprisingly large, cash collections having aggregated approximately 66 2-3 per cent. of normal receipts.

The increase in property account, as shown by the balance sheet, is principally on account of purchases and development of mineral properties in the lake region. The mineral reserves of your company are now the largest in its history, important additions to your iron ore holdings having been made North and South, both by exploration and purchase.

The unexpended balance of appropriations made for improvements and reconstruction is approximately $500,000, the larger portion of which is for the development of Lake Superior mines and Alabama properties. To carry through these expenditures no financing will be required, the company's present working capital being ample for all its present purposes.

The physical condition of your property was never as strong as it is to-day and the property was never as nearly self-contained, both with respect to its ownership of minerals and its production of raw materials required in its manufacturing department. The productive capacity of the property has been strengthened, the gains in production as compared with the four months from July 1 to October 31, 1906, being as follows:

Pig iron increased 80 per cent.

Bessemer steel increased 12½ per cent.

Finished products increased 10 per cent.

Under the stimulus of greater production, the earning power of the property has naturally increased. The results for the month of October, 1907, both in respect to volume of business, tons produced and net profits realized have established a record in excess of that for any preceding month in the history of the company.

Unfilled orders on hand as of November 25 aggregate 281,280 net tons of finished and semifinished material, which as compared with the tonnage on hand for a similar period of the same date for 1906 shows a reduction of about 25 per cent. The volume of business on hand and received during the month of November to date warranted the operation of about 50 per cent. of present manufacturing capacity. No stocks are being accumulated, production being limited strictly to current trade requirements. Manufactured stocks of materials both in the hands of consumer and producer are normal. There has been an absence of speculative buying and prices of your finished products are not excessive.

Balance Sheet.

The balance sheet of October 31, 1907, is given below, with a statement of the amount of increase or decrease as compared with that of June 30, 1907:

Balance Sheet of October 31, and Comparison with June 30, 1907.

	October 31, 1907.	Increase or decrease from June 30.
ASSETS.		
Capital assets:		
Cost of properties	$53,592,166.11	.....
Permanent investments in Potter Ore Company and other companies	862,744.60	.....
Total capital assets	$54,454,910.71	$508,806.84
Cash deposited with trustees:		
For redemption of 5 per cent. notes	30,000.00	*547,075.00
For redemption of 5 per cent. bonds	2,019.94	1,100.00
Current assets:		
Inventories	5,081,680.37	803,537.32
Accounts and bills receivable	5,117,965.13	353,925.82
Cash	797,169.32	*898,156.84
Deferred charges to operations:		
For stripping, developing at mines, &c.	868,974.76	41,400.32
Totals	$66,352,720.23	$263,540.46
LIABILITIES.		
Capital stock:		
Common	$27,191,000.00	.....
Preferred	20,416,900.00	.....
	$47,607,900.00	.....
Bonded debt:		
$10,000,000 5 per cent. gold bonds, less amount canceled or purchased	8,625,000.00	.....
Collateral trust notes	30,000.00	.....
Potter Ore Company bonds:		
Half of $700,000 bonds guaranteed jointly with Tennessee Company	350,000.00	.....
Total capital liabilities	$56,612,900.00	*$533,000.00
Funds:		
For exhaustion of minerals, &c.	1,236,149.82	98,455.57
Current liabilities:		
Accounts and bills payable	3,278,871.45	231,587.37
Taxes accrued	93,134.95	18,057.14
Interest accrued on bonds	35,937.50	*71,875.00
Interest accrued on 5 per cent. notes	.....	*7,037.50
Dividend on preferred stock payable July 1, 1907	.....	*768,370.50
Surplus	5,095,726.51	1,295,732.38
Totals	$66,352,720.23	.....
Net working assets	$7,588,870.92	$856,953.79

* Decrease.

The Jamestown Exposition, which opened April 26, closed at midnight November 30, with the regrettable distinction of having proved the most colossal failure in the history of expositions. It is said to be in debt $2,500,000, of which $900,000 is due the United States Government on a straight loan of $1,000,000. The total paid admissions were about 1,300,000, or only one-fifth of the number estimated by the promoters. When the exposition opened it was about one-third complete. The fair officials, it is true, had to contend with a tardy Government loan; there was execrable weather for three months prior to the opening of the fair; labor was scarce and wages high; the price of material at the time soared upward, and the great Government piers, which were advertised as the crowning attractions, were not dedicated until September 10. Even in the face of such a disaster there are many officials of the exposition company who want the fair reopened next spring and summer.

Naval Affairs.

The Secretary of the Navy's Report.

In his annual report to the President, Secretary of the Navy Metcalf recommends that Congress at its coming session appropriate $69,270,000 for the construction of new ships. This is the largest amount ever asked for by any Secretary of the Navy for naval increases at one time, and is about two-thirds of the total annual appropriation for the entire naval establishment, including construction, in the last few years.

Secretary Metcalf's recommendation is based on the reports of the General Board of the Navy and the Board of Construction. The General Board first took up the subject of naval increase and made a recommendation for an increase amounting to $62,000,000. This report then was recommended by the Board of Construction, which raised the limit of cost on many of the vessels, the increase aggregating $7,270,000. The recommendation is for the following ships:

Number and class.	Unit cost.	Total cost.
4 battleships of the Delaware type..	$9,500,000	$38,000,000
4 scout cruisers of the Chester type.	2,500,000	10,000,000
10 destroyers same type as those recently contracted for.....	850,000	8,500,000
4 submarines of the Octopus type..	380,000	1,520,000
1 ammunition ship.....	1,750,000	1,750,000
1 repair ship.....	2,000,000	2,000,000
2 mine laying ships (conversion and equipment of two cruisers now on the list).....	250,000	500,000
4 fleet colliers.....	1,750,000	7,000,000
Total		$69,270,000

In commenting upon the building programme, Secretary Metcalf says it is true that our navy at the present time is the second in efficiency, but he declares that this position cannot long be maintained unless Congress shall authorize additional ships. He points out that our position is largely due to the fact that our sea fighting strength has been increased by the completion and delivery of several new battleships and cruisers of the largest and most approved type, and he adds that it is of the highest importance that the old and obselete ships should be replaced by modern vessels. He gives his approval to the "all big gunship" of the Delaware type. The four ships recommended in his report are like the Delaware.

Secretary Metcalf says there is no reason why we should not build big ships as quickly as other nations, and points to the rapidity with which the Japanese Ibuki and the English Dreadnought were turned out. He includes in his report also a brief summary of the naval building programme of the different Powers and says:

> In foreign shipbuilding programmes of the current year the characteristic feature of all is the presence of battleships of heavy displacement, destroyers and submarines, and with the German excepted, the omission of armored cruisers. The speed and displacement of battleships are increasing in all countries, and there is a marked tendency toward a reduction in the number of calibers of guns composing the armament.

He shows that while the American navy is strong in battleships, there are three places where it is weak, and where other great naval Powers are outstripping the United States in the matter of construction. These defects are found in the insufficient number of destroyers, submarines and colliers. He discusses at some length the subject of submarine torpedo boats. After telling of the Newport tests to determine the efficiency of boats officered in competition, he quotes as follows from the board's report:

> It is the unanimous opinion of this board that the Octopus is the superior boat presented for tests; and, furthermore, that she is equal to the best boat now owned by the United States and under contract. The board is also of the opinion that a boat generally similar to the Octopus, but larger, would be a superior naval weapon.

He recommends four boats of the Octopus type, but larger, to cost $380,000 each.

The Naval Ordnance Bureau's Report.

A feature of the annual report of Admiral N. E. Mason, chief of the Naval Bureau of Ordnance, is a recommendation for the creation of an annual fund for experimental work in the development of ordnance material, and especially for the testing of various alloys in the manufacture of steel for guns and projectiles. The report also contains a strong plea for the privilege of purchasing ordnance material and supplies abroad when domestic industrial conditions are unfavorable.

SPECIAL STEEL FOR HIGH POWER GUNS.

In connection with the matter of the erosion of high power guns, a line of possible development has to do with the character of the steel used. Within the last three years a wonderful field has opened up in connection with the alloys of certain substances with steel, and there is every reason to believe that among these alloys there can be produced a metal for use in the bore of the gun which will resist erosion to a far greater extent than does the steel which we are now using. With such a metal for the tube of the gun and with the exceedingly tough and elastic metal which is already obtainable for hoops and jackets, we shall be able to use larger charges of powder and to carry the power of our guns far above the 50,000 foot tons (for the 12-in. gun) to which we are now limited. Whatever nation first finds the way to correct erosion—whether by changes in the gun or by changes in the powder—will at once take a commanding lead in the power of ordnance.

A 6-in. gun has just been completed of "amorphous" steel, having an elastic strength of 38 tons per square inch over the powder chamber and 16½ tons at the muzzle (the weakest part). With such a gun, if it were not for erosion, fully 50 per cent. could be added to the present service velocity.

ARMOR PIERCING PROJECTILES.

The status of affairs with regard to projectiles is far from satisfactory. The most urgent demand in this matter is for armor piercing projectiles. In its specifications for these the Bureau has constantly advanced its demands, to keep abreast of the developments reported from abroad, considering it altogether inadmissible to be content in a matter so absolutely vital, with any standard lower than the highest. The result of this position is that only two firms are at present even attempting to furnish projectiles of large caliber, and the deliveries from these firms are far behind.

A large number of armor piercing projectiles are now being advertised for, the bids to be opened in a short time, and while the Bureau can not speak definitely as regards the results of the opening of the bids, it is under the impression that the times of delivery at least will be very unsatisfactory for the above mentioned reasons, and therefore it is strongly recommended that permission be obtained from Congress to purchase armor piercing projectiles abroad for immediate use until such time as the projectile firms in the United States can make prompt deliveries of material coming up to the highest and best specifications.

ARMOR CONTRACTS.

The specifications governing the manufacture of the last armor contracted for require the same severe tests to be met as for that being furnished under the preceding contract; but they have been modified in slight details in such a manner as to allow the armor makers much freedom regarding the materials and methods of manufacture employed by them. It is hoped that this may stimulate research on their part, and result in the possible development by them of armor of even better resistance qualities than those of that now being furnished.

All of the armor makers are successfully meeting the severe ballistic test required under the contracts of August, 1906; deliveries of armor for the South Carolina are being made with the most gratifying expedition, and those for the Michigan in accordance with contract requirements.

FOREIGN PURCHASES OF MATERIAL.

The bureau has been very much hampered of late by not being able to puchase ordnance material abroad at times when the state of manufacture of such material in the United States, or the times of delivery of the manufactured material were not satisfactory. Ordnance material for experimental purposes has been occasionally purchased abroad, but occasions may arise when it will become almost absolutely necessary to purchase such material abroad in order to complete outfits in time, or because such material cannot be obtained in this country.

The bureau strongly recommends that Congress be requested to embody in the next appropriation bill a clause or paragraph as follows, or something of a similar character:

Provided, That all material purchased under the foregoing provisions of this act shall be of American manufacture, except in cases when in the judgment of the Secretary of the Navy it is to the manifest interest of the United States to make purchases in limited quantities abroad, which material shall be admitted free of duty.

The torpedo situation is such that in all probability it will be absolutely necessary, in order to make a start in equipping the navy with a sufficient number of torpedoes, to purchase at least 100 more torpedoes abroad while the manufacturers in this country are completing their present contracts, and while the torpedo station is getting the torpedo factory, appropriated for last year, in running order. There is also a probable urgent necessity of going abroad for a certain number of armor piercing projectiles in order to bring into service the minimum amount of reserve ammunition. It will also probably be necessary to purchase range finders abroad, as so far American manufacturers have been unable to develop a satisfactory range finder for use on board ship, although several firms have been endeavoring to do so.

The Chief Naval Constructor's Report.

The annual report of Admiral W. L. Capps, chief of the Bureau of Construction and Repair, makes a strong plea for liberal appropriations for the improvement of navy yard plants and the authorization of new dry docks, including the installation of modern high power machinery for handling heavy weights. The present policy of the Department with respect to shipbuilding and repairs in navy yards is also outlined, and there is presented a spirited defense of the methods employed in the last four years in the preparation of naval designs which have recently been the subject of much more or less expert criticism.

REPAIR WORK AT NAVY YARDS.

Special efforts have been made by the Bureau during the past year to arrange the repair work on the vessels of the navy so that it can practically all be done in the Government yards, leaving little or nothing to the establishments of private contractors. This plan Admiral Capps defends on the ground that it is economical and tends to greatly increase the efficiency of the working forces of the Government yards, arguments which he also urges in support of the proposition that the Government should continue to build at least small vessels in its own yards.

Private shipbuilders engaged in the construction of warships will be interested in a statement made by Admiral Capps of the Bureau's attitude to changes and alterations in design after construction work has been undertaken. During the last fiscal year items of this character aggregating more than $400,000 in estimated cost were disapproved by the Department upon recommendation of the Bureau. Shipbuilders will, no doubt, heartily approve the position taken by the Bureau in this regard, as it is a well-known fact that the charges made for such alterations rarely compensate for the additional trouble and expense, and in many cases precipitate controversies with the Department which result in the disallowance of reasonable and just claims. In this connection it is significant that two of the leading Atlantic coast ship yards are reported to be about to bring suits in the Court of Claims aggregating $700,000 for modifications authorized by the Navy Department with regard to the compensation for which disputes have arisen.

INCREASE OF THE NAVY.

The Chief Constructor refrains from making any recommendation with regard to the authorization of new warships, but presents an interesting statement of what has been accomplished in the way of additions to the navy during the past year. He says:

Since submitting the last annual report, nine battleships, two armored cruisers and two protected cruisers, whose aggregate trial displacement is 188,392 tons, have been assigned to the fleet. The battleship tonnage in commission has increased more than 150 per cent. during the quadrennial period ending November 1, 1907. The increase during the same period in total armored cruiser displacement is more than 500 per cent. It is obvious, therefore, that as compared with its condition on November 1, 1903, the effect has been practically trebled during the past four years.

At the date of submitting this report there are in course of construction, exclusive of torpedo boat destroyers, submarines and seagoing tugs, seven battleships of an aggregate trial displacement of 134,000 tons, two armored cruisers of an aggregate trial displacement of 29,000 tons, three scout cruisers of an aggregate trial displacement of 11,250 tons, and two fleet colliers of an aggregate trial displacement of 5170 tons, so that the total tonnage in course of construction for the United States Navy, exclusive of torpedo boat destroyers, submarines and seagoing tugs, is, at the present time, 179,420.

The major portion of Admiral Capps' report is devoted to a statement of the manner in which the naval designs approved by the Department during recent years have been prepared, the vigorous and convincing comments in this connection being intended as a reply to numerous recent criticisms.

Chief Engineer of Navy's Report.

An urgent appeal for a liberal appropriation to increase the machinery plants of the principal navy yards is made in the forthcoming annual report of Admiral C. W. Rae, chief of the Bureau of Steam Engineering. In many of the yards considerable obsolete machinery is in use which might well be replaced with up to date appliances which could be operated more economically. Admiral Rae devotes considerable space to a description of the Engineering Experiment Station now in process of erection and equipment at Annapolis, Md., and in which tests of interest to engineers and steam users in all lines are in contemplation.

The Engineering Experiment Station at Annapolis, Md., is now well under way, and it is expected that the buildings will be completed by March 1. In selecting the equipment much thought has been given to choosing the newest machine or apparatus adapted to the special purpose for which it is required and also adapted for experimental purposes. An interesting piece of apparatus purchased is a CO^2 recording instrument, much used in recent years in power houses, manufacturing establishments, &c., to check the work of firemen.

COAL TESTING APPLIANCES.

As a first step toward finding a simple and reliable means of testing coal for naval purposes at the yards and for the fleet on foreign stations a calorimeter has been purchased which is almost as accurate as the well-known "bomb" coal calorimeter, and, at the same time, of simpler construction and more easily operated. The necessity for testing coal before purchase is so obvious as to hardly admit of argument. The difficulty in the way at present is to find a method that can be carried out in practice by officers of the ships and at coal depots.

Of the numerous types of steam turbines which are coming into extensive use there is one which is especially adapted for use in small units, in which respect it differs materially from the Parsons or Curtis. It also has other features indicating that it will solve the problem of a motor for fireroom blowers much better than an electric motor in the hot, dusty localities where such blowers usually have to be placed. Information as to the success of this turbine is being collected, and if satisfactory, it is proposed to make tests as to its working under service conditions alongside of electric motors designed for the same purpose.

The following estimates for machinery plants at the various navy yards are presented by Admiral Rae as representing actual necessities to put the yards in condition to do work economically: Portsmouth, N. H., $75,000; Boston, $25,000; New York, $40,000; League Island, Pa., $25,000; Norfolk, Va., $40,000; Charleston, S. C., $50,000; Pensacola, Fla., $30,000; Mare Island, Cal., $75,000; Puget Sound, Wash., $50,000; New Orleans Naval Station, $10,000; Olongapo, P. I., naval station, $25,000; Cavite, P. I., naval station, $15,000.

The largest dividend disbursement ever made by the Pennsylvania Railroad Company was recorded November 30, when that road paid out $11,001,651.50 as its 104th consecutive dividend. That was its regular semiannual payment of 3½ per cent., but because of the increase in its outstanding stock, this disbursement reached record breaking proportions.

Trade Publications.

Drills and Grinders.—James Clark, Jr., Electric Company, Louisville, Ky. Circulars and bulletin. The circulars give illustrations, brief descriptions and dimensions of Willey breast drills, sensitive drills, center grinders with and without hand feed, hack saws, floor grinders, water tool grinders, surface grinders, hand grinders and buffers, hand drills, grinders for lathe carriage or tool post, bench grinders, and screw feed portable drills. Bulletin No. 27 pertains to Willey direct current dynamos and motors. The parts are dealt with separately, and capacities, code words, sizes and weights of the various types are given.

Plumbing Fittings.—Hydrometer & Specialty Company, Kokomo, Ind. Circular. Describes the construction and illustrates applications of the Hass hydrometer flush valve to water closets.

Oilstones.—Norton Company, Worcester, Mass. Pike Mfg. Company, Pike, N. H., sales agents. Folder. Deals with the India automobile oilstone for cleaning and polishing contact points of vibrator coils, and also claimed to be useful for grinding and smoothing rough surfaces and for sharpening pocket knives or any small edge tools.

Fans, Heaters, &c.—Massachusetts Fan Company, Watertown, Mass. Perpetual catalogue. Size 4 x 7 in.; present number of pages, 100. This catalogue by way of illustrations, dimension and capacity tables and explanatory notes sets forth the company's line of Davidson fans, steel plate fans, heaters, apparatus for special work and engines. Some 12 pages are devoted to engineering tables, such as weights of galvanized iron, areas and circumferences of circles, equalization tables, steam and gas pipe tables, &c. A complete index is given.

Wood Trimmers.—Fox Machine Company, Grand Rapids, Mich. Catalogue No. 70. Size 6 x 9¼ in.; pages 24. Pertains to the Nos. 8 F, 6 F, 6 E, 4 E, 4 A, 5 A and 6 A Fox universal wood trimmers, of which illustrations and descriptions are given. Compares different types of Fox trimmers and describes the trimmer-gauge construction, trimmer knives and their care, triangle gauge attachments, and the tabulated instruction plate for wood trimmers. The Fox dado or grooving heads, mitering machines, post boring machine, saw bench, wood lathe, hand joiner or buzz planer, band saw and box machine are also illustrated and briefly described.

Lathes.—R. K. Le Blond Machine Tool Company, Cincinnati, Ohio. Three catalogues. These refer respectively to the company's 24 in. high speed engine lathe and reducing lathe, the 20-in. high speed lathes, and turret lathes and equipments, giving illustrations, descriptions and specifications of each type.

Industrial and Portable Railroads.—Arthur Koppel Company, Machesney Building, Pittsburgh, Pa. Bulletin No. 205. Illustrates standard sections of light steel rails, rolled steel ties and portable track in sections, switches, frogs, turntables and other parts in track equipment, and industrial cars of all types, with their parts.

Water Gauges.—Ashcroft Mfg. Company, 85 Liberty street, New York City. Circular. Describes and lists the Ashcroft prismatic water gauge for locomotives, marine and stationary boilers. The special feature is the glass and casing, which cause the water to show black and the steam space silvery white, so that it is impossible to mistake the water level. The glass is made especially strong and is protected from being injured or doing injury by breaking.

Steam Traps.—John T. Lindstrom, 214 South Third street, Allentown, Pa. Circular. Describes the construction and operation and gives a price-list of Lindstrom Corliss valve steam traps.

Air Drying.—Green Fuel Economizer Company, Matteawan, N. Y. Bulletin No. 107. Subject, "Drying Materials in Industrial Plants," including such as fabrics, clothes, lumber, baking powder, paper, paper pulp, sugar, &c. Describes fans, blowers, steam coils, &c., manufactured by this company for use in drying plants. Typical installations are illustrated. It also refers to the Green air heaters, which utilize waste heat from furnaces.

Feed Water Filtration.—James Beggs & Co., 109 Liberty street, New York. Catalogue. Treats of the Blackburn-Smith feed water filter and grease extractor, which was illustrated and described in *The Iron Age* August 15, 1907.

Conveying and Power Transmitting Machinery.—Link Belt Company, Philadelphia, Pa. Bulletin No. 73. Offers suggestions for equipment for handling materials in foundries. Typical installations of conveyors, elevators, car hauls, &c., are illustrated.

Pipe Cutting and Threading Machinery.—Curtis & Curtis Company, Bridgeport, Conn. Edition No. 12 of the company's catalogue on the foregoing subject. Shows the various types of the Forbes patent die stocks for both hand and power operation, and the company's line of power pipe cutting and threading machinery. Motor applications are also illustrated, and a description is given of the Curtis patent pipe threading attachment for lathes, a patent nipple holder, improved reversible ratchet drill, pipe cutter, the Bridgeport die stock, a reversible ratchet die stock, malleable iron pipe vises, and other pipe fitters' tools.

Adjustable Lathe Collets.—Adjustable Collet Company, Cleveland, Ohio. Pamphlet. Calls attention to the advantages of the A. C. patent adjustable spring collet for holding bar stock in lathes, automatic chucking machines, &c., and also illustrates and describes the A. C. adjustable collet attachment, which converts an ordinary lathe into an automatic chucking machine. This attachment was described in *The Iron Age*, May 2, 1907.

Steel and Iron.—R. C. Foster Company, Brown-Marx Building, Birmingham, Ala. November-December stock list of beams, angles, channels, soft steel bars, high carbon steel bars, &c., ready for immediate shipment.

Electric Trolley Hoists.—Northern Engineering Works, Detroit, Mich. Leaflet. Illustrates and describes a number of electric hoists of the various types manufactured by the company, including drum type, two-motor electric traveling trolley hoists, with swivel trucks and operator's cab, and the electric pony and low-type electric trolley hoists.

Electric Motors.—Century Electric Company, St. Louis, Mo. Bulletin No. 9. Contains a complete description with illustrations of the company's line of single-phase alternating current motors. The principal claims are that they are self-starting under full load without the aid of clutches, phase coils, starting boxes, &c., and develop a heavy starting torque and accelerate quickly. The motors are adapted for driving small centrifugal pumps, routers for electrotypers' use, charging storage batteries for automobiles, telephone service and other light power equipment.

Coal and Ore Handling.—Dodge Coal Storage Company, Philadelphia, Pa. Book No. 70. Size 6 x 9 in.; pages 112. Subject, "Handling and Storing Coal and Ore." Divided into the following sections: The Dodge system of storing anthracite coal, locomotive coaling, circular storage cranes, standard gauge cranes, revolving cranes, high speed hoisting towers, bridge tramways, direct unloaders, Smith box-car loading machine, car dumping machines, man-operated trolley, and automatic railroad. Consists in the main of full-page illustrations of installations, alternating with brief descriptions of the same. The statement is made that the company is now prepared to apply alternating current motors to all forms of its hoisting apparatus.

Storage Batteries.—Westinghouse Machine Company, East Pittsburgh, Pa. Catalogue S-2, No. 7008. Size, 6 x 9 in.; pages 40. Gives illustrations and specifications of the various types and sizes of Westinghouse storage batteries for stationary use. Storage battery trucks for industrial railroad service are also dealt with.

Universal Cast Iron Pipe and Fittings.—Central Foundry Company, 116 Nassau street, New York City. Two catalogues, each 7 x 10 in. One, containing 69 pages and entitled "The Leaky Joint Problem and How Solved," explains what Universal pipe is, the advantages to be derived from its use, and statistics upon main leakage, showing by comparative tables and diagrams the saving by using Universal pipe and fittings. Catalogue and price-list U, containing 66 pages, gives the dimensions and prices of Universal pipe and fittings for gas, water, air, steam, &c.

Snow Plows.—Wilder Snow-Plow & Mfg. Company, Worcester, Mass. Pamphlet. Devoted to the Wilder radial snow plow for electric roads, which it is claimed will fight snow successfully on sharp curves, sudden changes of grade and all other conditions without special adjustment.

Tool Holders, &c.—"OK" Tool Holder Company, Shelton, Conn. Pamphlet. Pertains to the company's line of tool holders and tools for lathes, planers, shapers, boring mills, &c. Prices and dimensions are included.

Marine Gasoline Engines.—Ferro Machine & Foundry Company, Cleveland, Ohio. Catalogue and pamphlets. The catalogue is 7 x 10 in., contains 62 pages and is a treatise on marine engines in general and the Ferro marine engine in particular. Comprehensive descriptions explain how a gasoline engine works and how it is made. The parts of the engines are illustrated and described separately, and information is given concerning installing the engines in boats. The Ferro marine engines are made in 1½, 3½, 5½, 7, 7½, 11, 15, 10½, 17 and 25 hp. sizes. The pamphlets give instructions on the use of the engines, the advantages claimed for them, &c.

Gears.—Boston Gear Works, Norfolk Downs, Mass. Catalogue E. Size 3½ x 6 in.; pages 88. Gives illustrations, dimensions and prices of the company's products, including standard gears, chains, sprockets, bearings, steering devices, &c.

Thermit.—Goldschmidt Thermit Company, 90 West street, New York. Two pamphlets. One pertains to the butt-welding of wrought iron and steel pipes and rods by the Thermit process, and gives prices of parts and appliances necessary. The other contains an article entitled "The Production of Pure Metals Free from Carbon by the Aluminothermic Method," by Dr. Goldschmidt.

Platinum Articles.—J. Bishop & Co., Malvern, Pa. Catalogue. Size 5 x 8 in.; pages 39. Gives illustrations and brief

descriptions of hammered platinum crucibles, dishes, incinerating pans, parting apparatus, retorts, bottles, filter cones, combustion tubes, filter boat and holder, platinum tipped crucible tongs and tweezers, muffles, anodes, cathodes, triangles, cautery points, spoons, &c.

Machinery.—Drew Machinery Agency, Manchester, N. H. October, 1907, stock list of the company's line of steam power machinery, machine tools and woodworking machinery.

Gearing.—Horsburgh & Scott Company, Cleveland, Ohio. Catalogue. Size 6 x 9 in.; pages 56. Pertains to the construction, adaptability, care and strength of Peerless rawhide gears and pinions, and gives their sizes and prices. Data on metal cut gears of all kinds, instructions as to ordering, and general information on the subject of gearing are included.

Paints.—Arlington Mfg. Company, Canton, Ohio. Two pamphlets. One is devoted to the company's carbonelastic coating, "Quikdry" freight car paint, "Quikdry" steel car coating, satin white paint, galvanized iron paint, car roof paints, red lead preservative, Carbolac paint, station house and building paints, and rock-finish car floor and platform paints. The other pamphlet deals especially with Arlington galvanized steel paint.

Pipe Covering and Boiler Compound.—H. W. Johns-Manville Company, 100 William street, New York. Two pamphlets. Deal respectively with the Keystone plumbing pipe covering and the Magic compound for removing scale in boilers and preventing its further formation.

Crushing Machinery.—Sturtevant Mill Company, Boston, Mass. Bulletin No. 104. Gives illustrations and brief descriptions of fine rock and ore crushing machinery.

Iron and Steel.—Interstate Iron & Steel Company, Chicago, Ill. Catalogue. Size 4 x 7 in.; pages 56. Contains list of sizes and shapes rolled, National Iron Classification for iron bars and bands, and Standard Steel Classification; sectional outlines and sizes for angles, tees, channeled flats, cultivator beams, U harrow bars, steel tee rails and splice bars. Convenient tables of weights of the various sizes of bars and shapes rolled are also given in the book, together with a number of blank pages for memoranda.

The Koppel Mine Car.

A short time ago an order was placed with the Arthur Koppel Company, manufacturer of industrial railroad materials, Pittsburgh, Pa., for 200 mine cars by the New River Pocahontas Consolidated Coal Company. The first sample car of the order was ready for inspection about November 15, and a committee consisting of several of the best mine superintendents in the vicinity went to Koppel, Pa., to inspect the car. The members of the committee examined the car in minute detail, and then announced that it was the best that they had ever seen. An additional order for 200 cars was immediately placed with the Koppel Company.

The design of this car is for all steel construction. It is a very low car with large capacity, the overall hight from top of rail being only 30 in., with the capacity of 57½ cu. ft. The gauge is 44 in. The feature in the design is embodied in the round buffer, which is built of a special steel channel having a small depth and very wide flanges. At the ends this channel is bent to a semicircle and projected beyond the car, so as to give clearance between the corners of the cars on curves. Between the ends this bumper channel is continued clear through the car, making a continuous buffing column capable of carrying from car to car the end shocks met in the service, without transmitting the whole strain to any particular car. This feature is very similar to that used on the standard railroads. The large overhang of the sides, which gives the car its large capacity, has been well stiffened, and its shape, composed of large radial corners, facilitates the discharge of the load. The door at one end is of the lift type, and is also well stiffened to give it the necessary rigidity. The wheels, axles and bearings are of a special patented self-oiling type. The wheels are 16 in. in diameter.

The service into which these cars are to enter is the general coal mine service, transporting the coal from the workings to the tipple, where they are automatically dumped. A special device has been attached to the bottom of the car to catch the dogs on the chain hoist used in hauling at the tipple incline. This car is light, rigid and serviceable, and in view of its low overall hight and high capacity, together with its substantial buffers, was considered by the committee as most suitable for use in all mines where a narrow gauge railroad can be operated.

Large Iron Ore Stocks on Lake Erie.

DULUTH, MINN., November 29, 1907.—Many more iron mines have closed shipments. On the Menominee and Marquette ranges the mines of Oglebay, Norton & Co. are down. Their Bristol, at Crystal Falls, has shipped 350,000 tons, against 298,000 last year; their Empire, at Palmer, 46,600 tons, nothing before, and their Chatham, at Stambaugh, 55,000, nothing before. This firm has been far more active this year than ever, and if conditions are good will make considerably bigger shipments in 1908 than now. On the Mesaba range the large open pits of the Stevenson, Hawkins, Kinney, Cyprus and Commodore mines have closed for the year, with shipments, respectively, as follows, except Commodore: 1,000,000, 256,000, 138,000 and 257,300 tons. The Republic Iron & Steel Company is about through for the year, with total shipments from all ranges of 803,000 tons. Its business, aside from half a dozen Mesaba mines, is confined to the Cambria and Lillie, of Negaunee, and the Antoine Ore Company of Iron Mountain, Mich. The company's mines had shipped, to the middle of November, as follows: Mesaba mines—Alexander, 104,541 tons; Kinney, 138,515 tons; Union, 53,559 tons; Victoria, 79,444 tons; Bessemer, 73,349 tons; Franklin, 28,161 tons; Pettit, 36,073 tons; Onondaga, 400 tons; Mariska, 137 tons. Negaunee mines—Lillie, 71,357 tons; Cambria, 116,761 tons; Antoine, 99,936 tons. The Jones & Laughlin Steel Company, on the Mesaba range, has shipped as follows: Lincoln, 290,000 tons; Leetonia, 300,665 tons; Fowler, 33,272 tons. The company's Grant has not shipped nor has its Meadow, though the Fowler is a part of the Meadow deposit, and is developed in common with it. The Grant is the mine which was equipped several years ago with a Hoover & Mason grab, expected to revolutionize the business of handling open pit properties, and it has been under constant development for about four years. It did make a slight shipment two years ago, but has not done anything since. Mines of the International Harvester Company have shipped as follows: Hawkins, 256,406 tons; Agnew, 147,681 tons.

The Prospect for Winter Mining.

Shipments have been maintained remarkably well, especially from mines of the Steel Corporation. Its Duluth, Missabe & Northern road has passed the 1,250,000-ton mark for November and is still shipping at the rate of about 45,000 to 50,000 tons a day, while its Duluth & Iron Range has passed 650,000 tons and is forwarding about 22,000 tons a day. The weather is facilitating shipments, and there have been but a few days so far in which it has been necessary to soften ore. The lower lake docks will go into winter with a far larger stock of ore than ever, and will doubtless have an enormous stock next May, for the winter consumption cannot fail to be cut pretty closely in the middle. This will not tend toward large business for 1908 in the mines. Some judges of the situation seem to consider that there will be an increase over 1907, but they are undoubtedly wrong. It may be that winter operations in the lake region will be heavier than I have expected, for a number of the smaller companies, which are the chief underground miners, will maintain their properties in operation, but the gradual increase of the proportion of open pit shipments in the past two or three years has already made the winters rather quiet, and the natural tendency will be carried further this winter, in addition to whatever accentuation it may receive from unusual causes.

The Oliver Company is planning to continue stripping at several of its large operations on the Mesaba range during the winter. This is the case at the new McKinley mine, which will probably be a shipper of magnitude in 1909. It is also preparing to centralize a number of power plants for greater economy, and will probably install electrical equipments. The Cleveland-Cliffs Company will do the same at its new location of Gwin, and other companies are considering the same economies.

New Work on the Menominee.

On the Menominee range new explorations are starting in. Near the town of Saunders the Youngs interests have a compressor on section 18, where they are exploring with good indications: in section 31-43-35 they

have begun explorations in a new field, where indications are encouraging. Near Saunders, Longyear & Hodge are operating five diamond drills for the Brule Mining Company, which is itself running as many more, making one of the chief drill operations in the Menominee region. Eight drills are working near Blairs, and some of them have actually cut ore. In this district the general indications make it reasonable to expect that mines will be found. At Spring Valley the iron company of that name has taken a lease on property adjoining the Baltic mine, and is sinking a shaft. About 5000 tons of ore is already on the surface, taken from the exploratory shaft and from drifts at the depth of 125 ft. Additional properties will probably be leased shortly in the same district by this company.

Almost all the mining companies on Lake Superior have made their October wage payments in the same manner as the Oliver Iron Mining Company, that is, 80 per cent. in company non-cashable checks and due bills and 20 per cent. in cash. Two or three companies, whose managements are connected with banks, have paid in money. There are 40,000 men employed by the various mining companies in the iron regions of Lake Superior and on the roads whose traffic is essentially iron ore. These all draw monthly pay of about $2,800,000. And for the present 90 per cent. of them are being paid in these various forms of company checks for 80 per cent. of their accounts. The Breitung interests at Marquette, and the International Harvester Company, on the Mesaba range, as well as a very few others, have paid in money.

D. E. W.

OBITUARY.

SAMUEL C. WALKER, president of the Harbison-Walker Refractories Company, Pittsburgh, died November 23, aged 59 years. He was born in Allegheny, Pa., and spent the greater part of his life there. Although an invalid most of his life, Mr. Walker was very active in business affairs in Pittsburgh. For many years he was connected with Walker, Dunlevy & Co. until 1889, when he became president of the Harbison-Walker Company. When the Harbison-Walker Refractories Company was organized, in 1902, he was made president. He was a widower and childless.

JOHN IRVING WILLIAMS, inventor of the well-known Williams three-high bar mill, and a pioneer iron manufacturer of Youngstown, Ohio, died at his residence in that city last week. He was born May 11, 1824, in France, of English parents, who, when he was five years old, returned to England, and in 1830 came to America, settling at Boonton, N. J. In Boonton Mr. Williams received his education, beginning his work in a rolling mill at the age of 13 years. In 1838, with his parents, he went to Pittsburgh, where he and his father became identified with the Lorenz & Cuddy Company. Mr. Williams remained in Pittsburgh about 10 years, and after a short service at Kittanning, Pa., with his father and others purchased a mill and furnace at Hanging Rock. In 1854 he built the Scioto Rolling Mill at Portsmouth. Two years after the Portsmouth venture he returned to Pittsburgh to engage in the iron business, and from there in 1860 went to Dane County, Wisconsin, and settled on a farm. Two years afterward he was urged to return to Pittsburgh, and did so to take charge of the mill of Graff, Bennett & Co., where he remained until 1877, when with H. M. and N. M. McDowell he bought the Keystone Mills at Hazelwood. In 1881, at the instance of H. C. Ayer, he assumed the position of general superintendent with the Brown-Bonnell Iron Company, Youngstown, continuing in this charge until the consolidation with the Republic Iron & Steel Company in 1899. He leaves a widow, two sons and a daughter.

P. C. REED, assistant manager of the Alice Furnace at Sharpsville and the Ella Furnace at West Middlesex, both operated by the United Iron & Steel Company, Pittsburgh, died at his home in West Middlesex last week, aged 47 years. He leaves a widow.

EVERETT B. WEBSTER, Boston, former president of the National Steel & Wire Corporation, died at Jacksonville, Fla., November 29, aged 56 years. He was a native of Lynn, Mass., and after leaving the public schools entered the employ of Thomas W. Lawson, Boston. Severing that connection, he devoted himself to pushing large enterprises. He leaves a widow.

ROBERT ANGST, chief engineer of the Duluth & Iron Range Railroad, and one of the leading authorities in the world on ore dock construction, died at Duluth, November 30, aged 60 years. He was born in Switzerland.

CHARLES PHILO MATTHEWS, head of the School of Electric Engineering at Purdue University, Lafayette, Ind., died at Phoenix, Ariz., November 26. He was on leave of absence, seeking health. He was widely known in the field of electric engineering, especially that department devoted to the study of electric lighting. He was the inventor of a device, now generally used, for measuring the candle power of electric lights.

SAMUEL N. GINSBURG, Detroit, Mich., died November 22, aged 76 years. He was born in Russian Poland and came to this country 56 years ago, locating first in the South, then removing to New York, and finally settling in Detroit in 1875. He was the founder of the well-known firm of R. L. Ginsburg & Sons, dealers in old material, now the R. L. Ginsburg Sons' Company. He retired from business in 1905. He leaves a widow and two sons, Solomon of Buffalo, and Bernard of Detroit.

FREDERICK F. ZEHM, formerly treasurer and general manager of the Kutztown Foundry & Machine Company, Kutztown, Pa., died suddenly, December 1, of apoplexy, aged 71 years. He originated the foundry and machine business of Zehm & Brothers 42 years ago, and when the business was incorporated 10 years ago he served in the official capacity above mentioned until November 30, when he retired, dying the next day.

An Important California Coal Deposit.

Thomas H. Watkins of Scranton, Pa., and associates, under the name of the Stone Canon Consolidated Coal Company, have taken up a tract of 8000 acres, located in Monterey County, Cal., 21 miles from the Coast Line of the Southern Pacific Railroad at a point about 200 miles from San Francisco and 275 miles from Los Angeles, which they will develop. Although the home market for coal is large and other attempts at coal mining have been made in California, this is the most important development work thus far started. Most of the California coal deposits are lignitic in character, but this property is said to contain a seam of semi-bituminous coal about 18 ft. thick.

The coal has been known for a number of years, the land having been obtained originally by the Stanford-Huntington interests in behalf of the Southern Pacific Railroad, and for three or four years development work has been in progress. A mile and one-half of gang ways have now been opened up, and it is expected that in a year an output of 300,000 tons per annum will be obtained. The coal will be used chiefly for domestic purposes, as oil is a large factor in the steam plants. At present the domestic fuel is brought from great distances and is very expensive. Under these conditions, and as the development has been based on positive knowledge of the quality of the coal, it is expected that the enterprise will prove successful. Arrangements have been made with the Southern Pacific Railroad for the railroad construction. Among those associated with Mr. Watkins is Joseph A. Chancellor, vice-president of the company, who is prominent in the oil business and other enterprises in San Francisco. The company took hold of the property last September.

Commercial failures reported by *Dun's Review* for November represent liabilities of $12,208,092, against $6,809,601 for the corresponding month in 1906. Of the total, $6,835,000, was in manufacturing concerns, $4,344,185 in trading, and $1,028,230 in other commercial lines. In the last week of November failures in the United States numbered 259, against 192 in the corresponding week last year, and 34 in Canada, compared with 19 in 1906.

NEWS OF THE WORKS.

Iron and Steel.

The Highland Iron & Steel Company, Terre Haute, Ind., resumed operations in its bar iron and steel mill November 25.

The Keystone Furnace of the Reading Iron Company, Reading, Pa., was blown out November 28 for repairs. It will take several months to make the necessary repairs. After these are completed the furnace will resume operations.

The plant of the Sligo Iron & Steel Company, Connellsville, Pa., has closed down for extensive repairs and improvements.

The Schlieper Engineering Company, Pittsburgh, has started work in removing the plant formerly operated by the Tuscora Steel Company at Newcomerstown, Ohio, to Hazleton, Pa. The plant was recently purchased by the Hazleton Sheet Steel Company, of which E. Cooper Shapley, Girard Building, Philadelphia, is president. The new plant will consist of sheet and bar mills, a roofing plant and galvanizing department.

General Machinery.

The Hassell Iron Works Company, Colorado Springs, Colo., is contemplating the erection of a new machine shop, work upon which will be begun in the near future. This improvement will be 60 x 75 ft., and will be built of structural steel.

The Stephens-Adamson Mfg. Company, Aurora, Ill., maker of elevating, conveying and power transmission machinery, has within the last few days taken back quite a number of the 50 men laid off November 1 because of lack of orders. Business at that time did not justify working a full force, but because of a very satisfactory amount of new business secured during the month the plant is now running 10 hours per day with nearly its full quota of help.

The Louisiana Ice Company, New Orleans, La., incorporated with a capital stock of $100,000 for manufacturing purposes, will purchase pipe, pumps, &c., but will assemble its own machines. Charles A. Silker is president.

The Vilter Mfg Company, Milwaukee, Wis., manufacturer of Corliss engines and refrigerating machinery, is at work on an order for a 250-ton refrigerating machine which will be shipped to Texas. The company is running full crews both night and day on new business and expects to continue to do so throughout the winter.

The Westlake Machine Company, recently organized at Toledo, Ohio, has let contracts for its buildings and machinery. C. W. West is president.

The Wendlick Machine Company, St. Paul, Minn., has been incorporated with a capital stock of $15,000 for the purpose of carrying on the business formerly conducted under the partnership of Frank J. Wendlick and William Krumpelmann, known as Wendlick & Co. F. J. Wendlick is president; J. Sullivan, vice-president; J. F. Selb, secretary; W. H. Krumpelmann, treasurer.

The Remington Machine Company, Wilmington, Del., will enlarge its plant by the erection of a new tank shop of steel construction. Contracts for the equipment have been placed.

Power Plant Equipment.

The Owosso Light & Power Company, Owosso, Mich., is about to be organized to build a dam and power house on the Shiawassee River, the principal object being to supply electric power for interurban lines in operation and to be built. Contracts for buildings and machinery equipment will be let during the winter, and construction work commenced next summer during the low water period. E. M. Hopkins of Detroit will be president and Frank Wescott treasurer of the new company, the latter having headquarters in the State Savings Bank Building, Owosso, Mich.

The Industrial Power Company has been incorporated at Milwaukee, Wis., for the manufacture of gas engines and gas producers, with a capital stock of $120,000, and Cyril J. Atkinson, J. H. Zimmerman and E. C. Stern as incorporators.

The Terre Haute Waterworks Company, Terre Haute, Ind., has increased its capital stock to $500,000.

J. G. O'Brien, proprietor of the Jamestown Boiler Works, Jamestown, N. Y., has completed the erection of a brick building, 40 x 80 ft., across the street from the present shop. Mr. O'Brien will vacate the old plant and will move the equipment into the new one.

The Filer & Stowell Company, Milwaukee, Wis., has recently received a contract from the Givinn Milling Company, Columbus, Ohio, for a new cross compound Corliss engine, which will be installed in the new flour mill now being erected at Columbus.

The Nelson Investment Company, Fort Smith, Ark., was recently incorporated with a capital of $100,000 to build, operate and own water works, electric street car lines, &c. The officers of the company are J. T. Nelson, president; J. M. Spradling, vice-president; T. J. Wright, treasurer; T. A. Trusty, secretary.

The Beaver River Power Company, Box 1513, Salt Lake City, Utah, has been incorporated with a capital stock of $500,000 to engage in the building of power plants and the development of and sale of electric current. The directors are L. L. Nunn, E. P. Bacon, C. S. Ruffner, A. D. Smith, L. B. Fuller, W. L. Blearsach and F. F. Steigmeyer.

The Lima & Honeoye Electric Light & Railroad Company, Lima, N. Y., expects to build a power plant and 26 miles of track next season.

The Westinghouse Machine Company, East Pittsburgh, Pa., has received a contract for a 1200-hp. turbine engine for the Colorado Heat & Power Company, Canon City, Colo., where it will go to supplement other Westinghouse turbines supplied some time ago.

The S. R. Smythe Company, engineer and contractor, House Building, Pittsburgh, has about completed the installation of 10 Smythe gas producers and a new heating furnace at the plant of the Tyler Tube & Pipe Company, Washington, Pa.

Foundries.

The Scott Stove & Furnace Company, Cambridge City, Ind., is, notwithstanding the present tightness of money, pushing construction on its new plant, which is well under way. The principal building will be of brick and cement, 60 x 214 ft., and will be equipped throughout with modern machinery and appliances in both foundry and mounting rooms. This company moved to Cambridge City from Marion, Ind., about a year ago, where it was known as the Scott National Radiator Company.

The capital stock of the Michigan Malleable Iron Company, Detroit, Mich., has recently been increased from $600,000 to $800,000, and in connection with this enlargement of resources the company will within a short time make extensive improvements to the Detroit plant.

The steel foundry of the Youngstown Foundry & Machine Company, Youngstown, Ohio, is closed down and will not start again until after the first of the year.

The property of the Vulcan Foundry & Machine Company, New Castle, Pa., which went into bankruptcy some time ago, will be offered for sale on Saturday, December 14, by Charles L. Baldwin, trustee in bankruptcy. The property comprises a complete foundry and machine shop, with the equipment and considerable ground. The plant, if sold, will be disposed of subject to a mortgage of $50,000.

Bridges and Buildings.

The Isham-Miller Company, Inc., Butternut, Mich., is considering propositions for the removal of its plant to a more central point affording better shipping facilities. Lansing, Mich., may probably be chosen, and if so a new building of brick construction, 70 x 100 ft., will be built. Besides erecting and building all kinds of bridge work, the company manufactures the Isham-Miller expanding iron road culvert.

The Wymer-Harris Construction Company, Youngstown, Ohio, of which A. L. Wymer is general manager, has received a contract for the erection of an open hearth steel plant at Syracuse, N. Y. The company has a gang of men at work at the plant of the Berger Mfg. Company, in Canton, erecting additions. Another gang is engaged in erecting a double deck bridge at Warren, Pa. A third gang is erecting a railroad bridge at Mansfield, Ohio. At Saxton, Pa., two railroad trestles and a casting house are being erected. A large contract is being completed for the Shenango Furnace Company at Sharpsville. The company has also sent figures on the erection of a large cement plant at Iola, Kan.

Fires.

The hammer shop of the locomotive department of the New York Central & Hudson River Railroad at West Albany, N. Y., was destroyed by fire November 30, the loss being about $20,000.

The foundry of H. R. Ives & Co., Montreal, Canada, was damaged $20,000 by fire last week.

Hardware.

The Armstrong Light Company, Birmingham, Ala., manufacturer of improved gasoline lights and supplies, has been incorporated with a capital stock of $5000. The officers are H. L. Armstrong, president and treasurer; H. H. Miller, vice-president and superintendent; M. M. Freed, secretary.

The Anchor Stove & Range Company, Louisville, Ky., has suffered a small loss by fire in its mounting room, necessitating the shutdown of the foundry department about a week.

The Marvel Mfg. Company, Ionia, Mich., maker of washing machines, recently closed a contract for more than $100,000 worth of machines to be built during the coming year.

The Decatur Furnace Company, Decatur, Ind., states that it has business enough on hand to keep its present force busy until the first of the year and perhaps longer.

The Acme Broom Company, manufacturer of house, mill and barn brooms, whose plant at Newton Upper Falls, Mass., was destroyed by fire recently, has decided to liquidate its business. J. E. Eldridge, president of the company, is planning to establish a broom business in Westerly, R. I., in connection with Westerly interests, and it is understood that he will take the building formerly occupied by the W. F. Safford Mfg. Company.

The Henry Rowe Mfg. Company, Newaygo, Mich., manufacturer of automatic lathe wood turnings, benches, trucks, &c., has

been making extensive improvements in its plant, doubling its dry kiln facilities and installing some new machinery, including a New Britain chain mortiser and a larger Porter buzz planer.

The Crawfordsville Wire & Nail Company, Crawfordsville, Ind., has begun work on a new 60 x 202 ft. warehouse, which it expects to have ready for occupancy by January 1.

The O'Neil Oil & Paint Company, Milwaukee, Wis., has increased its capital stock from $150,000 to $250,000, which it is explained more nearly represents the actual capital that has been actually used in the business for some time past. Though no plans have as yet been formulated, it is the intention of the company eventually to build a new and modern plant.

The Jones Self-Measuring Pump Company, Marion, Ind., having outgrown its former quarters, has secured the plant of the Oil Well Supply Company, in which it is now located. The company manufactures self-measuring and self-computing pumps for oil and gasoline.

The Idaho National Harvester Company, Ltd., Moscow, Idaho, manufacturer of agricultural implements, has purchased the property and buildings of the Rhodes Iron Works, which it will thoroughly overhaul and equip with new machinery. The officers of the company are J. J. Day, president and manager; Cornelius Quesnet, vice-president; Andrew M. Anderson, secretary and treasurer; G. P. Mix, assistant secretary.

The Washington Handle Company, with plant at Washington C. H., Ohio, has been incorporated under the laws of Indiana, with principal office at New Castle, Ind., and capital stock of $10,000 fully paid. Following are the officers: C. W. Mouch, president; Chas. Crute, vice-president; J. T. Myler, secretary; O. J. Mobley, treasurer and manager. These persons with Thomas Maxwell comprise the Board of Directors. The company expects to manufacture a full line of second growth ash D and long handles, and has put in a full set of machinery to bore, rivet and bend handles. It is stated that the output is practically sold for the next six months.

The Weeks Scale Company, capitalized at $20,000, has been incorporated at Buffalo, N. Y., to take over the business of the former company of the same name. The plant of the company on Seventh street will be considerably enlarged to take care of the increased business.

Miscellaneous.

R. L. Beasley, Gordon, Ala., intends to organize a stock company and establish a plant for the manufacture of his patented steam stump pullers and stump ringers.

The Northwestern Steel & Iron Works, Eau Claire, Wis., manufacturer of agricultural implements, has completed the installation of machinery in its new plant, which is now in operation.

The Perkins Windmill & Axe Company, Mishawaka, Ind., has changed its name to the Perkins Windmill Company.

The Wisconsin Wire Works, Appleton, Wis., is rebuilding its plant destroyed by fire in June. The new plant will be two stories high, of concrete block construction, having a floor space of 7200 sq. ft. The new equipment to be installed will enable the company to weave wire suitable for any width machine used in the paper trade.

The plant of the Hickson Bedstead Company, Muncie, Ind., was destroyed by fire November 30, with an estimated loss of $50,000, fully insured. E. J. Hickson was the principal stockholder. The company has another plant at Butler, Pa.

On petition of stockholders, Harvey Hooke, president of the Muncie Auto-Parts Company, Muncie, Ind., has been appointed temporary receiver for the company. The assets are alleged to be far in excess of the liabilities. The action is taken on account of money market emergencies and to continue the business uninterruptedly. In the few months since its organization the company has outgrown two buildings.

The Stiegelmeyer Train Control Company has been incorporated at Indianapolis, Ind., with $750,000 capital stock, and will take over the stock of the Automatic Train Control Company, which was organized in February last to manufacture a train control device for preventing collisions and wrecks. The directors of the new company are J. E. Stiegelmeyer, inventor of the device; Carey L. Smith, O. W. Beckwith, Wm. E. Haywood and Chas. E. Anderegg.

The Hines Mfg. Company, Portland, Ind., has increased its capital stock with a view to perfecting a new metal oil derrick, which if successful will probably be added to the company's line of manufacture. The derrick is constructed entirely of steel and is designed to be erected in sections in a convenient manner.

The Churchill Electric Time Switch Company, Pueblo, Colo., has been incorporated with a capital stock of $250,000. The electric time switch to be manufactured by this company is designed to automatically turn off show window lights, sign lights or an entire lighting system. Those interested in the company are H. H. Churchill, H. P. Vories and E. E. Churchill, secretary.

The United States Rocking Grate Bar Company, Great Northern Building, Chicago, has been organized with a capital of $2500, to manufacture grates, bars, &c. This is but a reincorporation of an old company bearing the same name and under the same management, which is constituted as follows: John J. Moroney, president; H. S. Hopkins, vice-president, and A. M. Hopkins, secretary and treasurer.

Paradigm skylights to the extent of 55,000 sq. ft. are to be installed on the new locomotive shops at Stratford, Ont., for the Grand Trunk Railroad, by Arthur E. Rendle of Montreal, New York and Chicago. The Arnold Company, Chicago, is the engineer. Mr. Rendle has also the contract for about 17,000 sq. ft. of skylights for the car shops at London, Ont., for the Grand Trunk Railroad.

The Pennsylvania Steel Pulley Company, Pittsburgh, has applied for a charter, the incorporators being William K. Johnson, A. T. C. Gordon and Alexander Black.

Restriction of Pig Iron Production.

The merchant blast furnaces of the country have lately fallen in line to a greater extent than in early November with the curtailment movement, which has been so pronounced in the case of steel companies, particularly the subsidiaries of the United States Steel Corporation. Returns already received by *The Iron Age* covering November operations of the blast furnace companies show that 18 Northern merchant furnaces were blown out or banked in that month or on December 1, these having a weekly capacity of 22,500 tons of pig iron. About one-third of the merchant stacks are yet to be heard from, including those in the South, where it is known that a good many furnaces went out last month, seven or eight stopping in Alabama. The United States Steel Corporation put out 21 furnaces in November and banked 6. On November 1 it had 30 furnaces out, so that 51 are now cold, with 6 banked. The independent steel companies, so far as heard from, put out 10 furnaces in November and had 10 idle on November 1.

Among merchant furnaces blown out or banked in November, or on December 1, are Belfont and Bird in the Hanging Rock District, Ashland in Kentucky, one Shenango in the Shenango Valley, one Hubbard in the Mahoning Valley, one Toledo in Northern Ohio, Federal in the Chicago District, Thomas at Milwaukee (December 2), one Allentown and one Warwick in the Lehigh Valley, one Paxton at Harrisburg, and one furnace in the Lebanon Valley, Marshall in western Pennsylvania, one Henry Clay and Keystone in the Schuylkill Valley, one Buffalo & Susquehanna at Buffalo.

Labor Notes.

Recent statistics of the Iron Founders' Union in Great Britain show a membership of 19,362, an increase in 12 months of 228. The total number "on the funds" in November was 2950. This union and the Scottish Iron Molders' Union do not resort to picketing in case of strikes, but simply close to their membership shops in which the union's demands are not met. The Iron Founders' Union reports the state of trade not altogether satisfactory.

The announcement on page 1562 of *The Iron Age* for November 28 of a reduction in the wages of chainmakers of 10 per cent. should have stated that this reduction only applies to makers of hand made chain, who had received an advance of 10 per cent. last March.

The Ohio Works of the Carnegie Steel Company at Youngstown, Ohio, were closed in all departments November 27, and will remain idle for some time to allow general repairing and the installation of new equipment. A new three-high 43-in. blooming mill is to be installed, to be driven by Tod engines. This will take several weeks. Twelve new 50-ton open hearth furnaces are being added to this plant. Two new blast furnaces are also being built, but these will not be ready for operation until some time next year.

The Iron and Metal Trades

The volume of new orders for finished Iron and Steel is still light, and little improvement is expected during the current month. So far as figures are available, they justify an estimate, during November, of about 40 per cent. of the capacity of the mills. It is noted that it is the smaller purchasers who contributed the bulk of the new business, and it is they, too, from whom collections are most satisfactory. It is significant, too, that the Wire industry whose products go into so many diversified channels and to so large an extent to the farming community is relatively best off.

Output is being closely adjusted to shipments and sales, and probably averages 40 per cent. of the capacity. In some branches the cutting down of the make is even more drastic. Thus, the American Sheet & Tin Plate Company is operating only about 20 per cent. of its mills making Tin Plate products, while most of the independent mills are running half time or less.

Until lately the Steel makers were most radical in blowing out blast furnaces, the United States Steel Corporation now having only 45 per cent. of its Pig Iron capacity in operation. Now, however, the Merchant furnaces are pursuing the same course in increasing numbers. Partial reports from the producers north of the Potomac and the Ohio indicate that since November 1 to date 18 Merchant furnaces, with a weekly capacity of 22,000 tons, have stopped. Others are on the eve of blowing out. Thus by the 15th of this month the great majority of the furnaces in the Mahoning and Shenango valleys will be idle.

The Pig Iron markets have been disturbed by reports of large transactions at very low figures, made by a Southern interest. These should be received with reserve. They may be partially explained by the fact that what looks like the initiation of a serious buying movement seems imminent. Buyers and sellers seem to be getting together. The former seem to have a $14 basis for No. 2 in Birmingham as their goal, while the latter generally are asking $15, although $14.50 has been named. Our Cincinnati correspondent notes inquiries in large lots, aggregating between 35,000 and 40,000 tons.

What the basis for new business in Bessemer Pig in the Central West will be has not yet been worked out, but a lower range for the first quarter of 1908 is expected. In the East there has been only one 10,000-ton transaction in Basic Pig, under special circumstances. A very important bearing on the future of Steel prices, aside from lower cost of Pig Iron, is the very great decline in Scrap.

It looks, therefore, as though an adjustment of prices in Finished Iron and Steel is a likely development. The attitude of the great Steel interests makes it pretty certain that this will be conservatively done and that disturbing irregularity will be avoided.

Some tonnage of Structural Material has been placed, including 3500 tons for the car barn of the New York City Railway and 2500 tons for the Madison avenue bridge over the Harlem. In Chicago, within the week, figures have been submitted on Structural and Bridge work which involve a total tonnage of 11,000 tons.

New Britain is calling for 10,000 tons of Water Pipe and Chicago is in the market for 5500 tons.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Dec. 4, 1907.	Nov. 27, 1907.	Nov. 6, 1907.	Dec. 5, 1906.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	*$18.75*	$18.75	$19.00	$24.50
Foundry No. 2, Southern, Cincinnati	*18.00*	18.75	20.25	25.00
Foundry No. 2, Local, Chicago	*19.00*	19.25	21.50	25.50
Bessemer, Pittsburgh	*19.90*	19.90	20.90	23.35
Gray Forge, Pittsburgh	*18.90*	18.90	19.90	22.85
Lake Superior Charcoal, Chicago	*25.00*	25.00	25.50	26.00
BILLETS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	28.00	28.00	28.00	29.50
Forging Billets, Pittsburgh	30.00	30.00	30.00	36.50
Open Hearth Billets, Phila.	30.00	30.00	30.00	33.00
Wire Rods, Pittsburgh	34.00	34.00	34.00	37.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago	*13.75*	13.75	16.00	20.50
Steel Rails, Melting, Phila.	*11.50*	12.00	13.50	20.00
Iron Rails, Chicago	*15.50*	16.00	19.50	28.00
Iron Rails, Philadelphia	*17.50*	17.50	19.00	27.50
Car Wheels, Chicago	*22.00*	22.00	24.50	24.50
Car Wheels, Philadelphia	19.00	19.00	19.00	23.00
Heavy Steel Scrap, Pittsburgh	*13.50*	14.50	15.50	20.00
Heavy Steel Scrap, Chicago	*12.00*	12.00	14.00	17.50
Heavy Steel Scrap, Philadelphia	*11.50*	12.00	13.50	19.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	1.75	1.75	1.75	1.83⅓
Common Iron Bars, Chicago	*1.75*	1.75	1.78	1.71⅓
Common Iron Bars, Pittsburgh	*1.60*	1.60	1.70	1.80
Steel Bars, Tidewater, New York	1.76	1.76	1.76	1.74⅓
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.60
Tank Plates, Tidewater, New York	1.86	1.86	1.86	1.84⅓
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.70
Beams, Tidewater, New York	1.86	1.86	1.86	1.84⅓
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.86	1.86	1.86	1.84⅓
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.70	1.70	1.70	1.65
Skelp, Sheared Steel, Pittsburgh	1.80	1.80	1.80	1.70
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.50	2.50	2.50	2.50
Wire Nails, Pittsburgh	2.05	2.05	2.05	2.00
Cut Nails, Pittsburgh	*2.00*	2.00	2.05	2.05
Barb Wire, Galv., Pittsburgh	2.50	2.50	2.50	2.45
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	*13.75*	13.75	14.50	22.75
Electrolytic Copper, New York	*13.62½*	13.62½	14.37½	22.75
Spelter, New York	*4.60*	4.70	5.50	6.50
Spelter, St. Louis	*4.45*	4.60	5.35	6.35
Lead, New York	*4.12½*	4.20	4.60	6.05
Lead, St. Louis	*4.00*	4.10	4.40	5.87½
Tin, New York	*30.10*	31.20	30.60	42.45
Antimony, Hallett, New York	*8.75*	9.00	10.50	25.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	$4.09	$4.09	$4.09	$4.09

Chicago.

FISHER BUILDING, December 4, 1907.—(*By Telegraph.*)

Whatever may be said of other phases of the situation, the local currency supply is distinctly better. In fact, there seems to be no further need of the continued issuance of clearing house checks, and orders have been given to stop printing them. A still more favorable feature is presented in reports received from country banks. In answer to nearly 5000 letters sent out by the Clearing House Committee to such correspondents, asking opinions as to the advisability of resuming currency payments, replies from one-half the number already received are almost unanimously in favor of such action. While it is not expected that a strong reaction in trade channels will immediately set in with the restoration of a normal currency supply, yet this must precede any definite improvement, and is therefore awaited with interest. If any Rail tonnage for 1908 has been recently placed, it has been through reservation agreements, there having been, so far as known, no specified orders given. In all finished lines new business is extremely light, and specifications have been held up on every hand. There is no doubt that many postponements have been asked out of an excess of apprehension rather than because of imperative necessity. When money becomes easier shipping orders will be probably given for many held up deliveries. Some concessions are noted in store prices of Merchant Pipe and Sheets, but mill prices in practically all finished material continue firm. Structural Material projects continue to develop, and estimates have been furnished on not less than 11,000 tons within a week, but no contracts of note have

been closed. There is little demand for Pig Iron for immediate shipment. It is believed in this market that the rumor of the sale of 100,000 tons of Southern Foundry Pig Iron is without foundation. Yet if the price at which it is reported to have been taken, $13, Birmingham, were actually offered, it would probably find a buyer.

Pig Iron.—The feature of particular interest in an otherwise listless market is the increasing number of inquiries that have come in during the week respecting tonnage for first quarter delivery. Notwithstanding these are regarded chiefly as feelers, and have so far not resulted in the placing of orders, yet they foreshadow a demand that must later develop. Letters from consumers, asking for advice as to the trend of the market and the extent of curtailment likely to be reached by the banking and blowing out of furnaces have also been more numerous of late indicating more of a disposition to look ahead than has been seen for some time. There have been rumors of the sale of a large tonnage of Southern Iron reaching, according to some reports, 100,000 tons. No confirmation can be had of any sale even remotely approximating this tonnage, which is said to have been placed around $13, Birmingham. In fact, but little credence is given to the report either as to tonnage or price by those closely in touch with the situation here. At the same time it may be said with reference to next year's delivery that no one is in position to say with firm assurance what might or might not have been done. Sales are still too few and of such varied character as to terms and conditions to establish a very definite price level. Sales of a moderate tonnage of Southern Iron have, however, been made, which indicate that for December delivery a majority of the furnaces are holding at $15, Birmingham, though nominally quoted at $16 to $16.50. Northern Foundry No. 2 has been shaded off at least 50c. below the minimum quotation, and it is likely that even better could be done on a firm offer of good tonnage. There has certainly been no increase in the foundry melt and further curtailment of the Foundry Iron output seems inevitable. Northern furnaces are preparing to go out of blast within a short time unless new business is received in the meantime that will justify their continued operation. The following prices are for December delivery, f.o.b. Chicago:

Lake Superior Charcoal	$25.00 to $25.50
Northern Coke Foundry, No. 1	19.50 to 20.00
Northern Coke Foundry, No. 2	19.00 to 19.50
Northern Coke Foundry, No. 3	18.50 to 19.00
Northern Scotch, No. 1	20.50 to 21.00
Ohio Strong Softeners, No. 1	20.75 to 21.25
Ohio Strong Softeners, No. 2	20.25 to 20.75
Southern Coke, No. 1	19.85 to 20.35
Southern Coke, No. 2	19.35 to 19.85
Southern Coke, No. 3	18.85 to 19.35
Southern Coke, No. 4	18.35 to 18.85
Southern Coke, No. 1 Soft	19.85 to 20.35
Southern Coke, No. 2 Soft	19.35 to 19.85
Southern Gray Forge	17.35 to 17.85
Southern Mottled	16.35 to 16.85
Malleable Bessemer	19.00 to 19.50
Standard Bessemer	22.40 to 22.90
Jackson Co. and Kentucky Silvery, 6 %	29.40 to 29.90
Jackson Co. and Kentucky Silvery, 8 %	31.40 to 31.90
Jackson Co. and Kentucky Silvery, 10 %	33.40 to 33.90

(*By Mail.*)

Billets and Rods.—Small lots for current needs continue to be the limit of activity in Billets. Tonnage for future delivery is not thought of even to the extent of inquiry. Prices, however, are not affected by the general lethargy of movement, Forging Billets still being held at from $33 to $34, Chicago. Wire Rods are likewise unaffected as to price, and are held at about $34 to $35, Pittsburgh, though transactions are light.

Rails and Track Supplies.—No new business in Standard Section Rails has developed, in out and out orders, at least; but there is reason to believe that some 1908 tonnage has been taken care of by reservation agreements. The Illinois Steel Company have Rail specifications in hand to keep its mills employed up to and perhaps beyond the first of the year. Very little new tonnage in Light Rails and Track Supplies is coming out, and quoted prices are subject to shadings of $2 a ton on Rails and about 10c. per cwt. on Spikes. We quote as follows: Angle Bars, accompanying Rail orders, 1907 delivery, 1.65c.; car lots, 1.75c. to 1.85c.; Spikes, 2c. to 2.10c., according to delivery; Track Bolts, 2.50c. to 2.60c., base, Square Nuts, and 2.65c. to 2.75c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb. sections, $32; 20-lb., $33; 16-lb., $34; 12-lb., $35, f.o.b. mill. Standard Sections, $28, f.o.b. mill, full freight to destination.

Structural Material.—Within a week figures have been submitted on an aggregate of 11,000 tons of bridge and building Structural Material. Like other similar projects, the majority, instead of being promptly closed, will probably join the already extended waiting list. It is significant, however, that in nearly all cases these estimates are upon sound business propositions, which, though deferred by present untoward financial conditions, are expected to result in actual business as soon as money is available. The tonnage above noted includes two railroad bridge jobs, amounting to about 4000 tons, orders for which will doubtless be placed in the near future. Prices from store are quoted without change at 2.05c. to 2.10c., and mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

Plates.—Contracts involving tonnage for forward delivery are not being placed, the demand being closely held to orders for present consumption. Shipments from warehouse stocks are fair and have in the past few days even shown some improvement. Plate users prefer to piece out their stocks by store orders rather than to place new stock orders at this time. We quote for future delivery as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2.20c. to 2.30c.; from 72 to 96 in. wide, 2.30c. to 2.40c.; 3-16 in. up to 60 in. wide, 2.30c. to 2.40c.; 72 in. wide, 2.50c. to 2.65c.; No. 8, up to 60 in. wide, 2.35c. to 2.45c.; Flange and Head quality, 0.25c. extra.

Sheets.—Only a moderate proportion of the business coming to the mills can be credited to new demand. The local mill is running principally on specifications against contracts, which have been sufficient to keep things moving. Store prices are a little easier, and are revised to a basis of 2.25c. for No. 10 Blue Annealed, and 4c. for No. 28 Galvanized. For round lot orders from stock the prices on Black Sheets would probably be shaded $1 a ton. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 2.03c.; No. 12, 2.08c.; No. 14, 2.13c.; No. 16, 2.23c.; Box Annealed, Nos. 17 to 21, 2.53c.; Nos. 22 to 24, 2.58c.; Nos. 25 to 26, 2.63c.; No. 27, 2.68c.; No. 28, 2.78c.; No. 29, 2.88c.; No. 30, 2.98c.; Galvanized Sheets, Nos. 10 to 14, 2.83c.; Nos. 15 and 16, 3.03c.; Nos. 17 to 21, 3.18c.; Nos. 22 to 24, 3.33c.; Nos. 25 and 26, 3.53c.; No. 27, 3.73c.; No. 28, 3.93c.; No. 30, 4.43c. Sheets from store: Blue Annealed, No. 10, 2.25c.; No. 12, 2.30c.; No. 14, 2.35c.; No. 16, 2.45c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3.10c.; Nos. 18 to 20, 3.25c.; Nos. 22 to 24, 3.40c.; No. 26, 3.60c.; No. 27, 3.80c.; No. 28, 4c.; No. 30, 4.50c. to 4.55c

Bars.—Though the output has been materially reduced, most of the Western mills are running a greater part of the time. It is believed that the requests received for postponement of shipment on contracts have overreached the actual necessities of the case, and that as soon as the restricting scarcity of money is past resumption of shipments will be asked for on a large part of such tonnage. Some little improvement in the demand for Bar Iron is noted, but as with Steel Bars the volume of business coming out is light. Prices continue firm on such tonnage as is offered. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.75c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Pipe.—New mill business is extremely light, being limited to small orders representing urgent needs. The curtailment of building work has unfavorably affected the demand from jobbers' stocks. Sharper competition has developed and as a result store prices have declined about one point. Prices from mill are unchanged. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, ¾ to 6 in., 61.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 72 per cent. on Black Steel Pipe, ¾ to 6 in. About four points advance above these prices is asked for Iron Pipe.

Boiler Tubes.—A fair demand for small lots from warehouse stocks continues, but such orders are closely held to actual present needs. Mill orders are of much the same character, there being no buying ahead and only a desultory trade for prompt delivery. Mill quotations for future delivery, on the base sizes, are as follows: 2⅜ to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1¼ in.	35	35	35
1¾ to 2¼ in.	50	35	35
2½ in.	52½	35	35
2¾ to 5 in.	60	47½	47½
6 in. and larger	50	35	..

Merchant Steel.—There is practically no new business being offered, nor are specifications coming in as freely as

they should. Shipment has been held up on a large part of the agricultural and other tonnage previously placed. It is generally believed that when the tension of the banking situation is relieved the arrested movement in this market will again go forward with at least reasonable vigor. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish up to 1½ x ½ in., 1.93c.; Iron Finish, 1½ x ½ in. and larger, 1.78c., base; Channels for solid Rubber Tires, ¾ to 1 in., 2.28c., and 1⅛ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46½c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Shafting, 54 per cent. off in car lots; 48 per cent., less than car lots, base territory delivery.

Cast Iron Pipe.—The weak and unsettled condition of the Pig Iron market is doubtless responsible in a measure for the reluctance displayed by consumers in placing orders for Cast Iron Pipe. It is true that financial conditions bear as heavily in a restrictive way upon this commodity as others, but the softening tendency observed in Pig Iron strengthens the belief of consumers in lower prices. Outside of the 3000 tons for Tucson, Ariz., up for letting on December 2, there are no new tonnages of any note in sight. Prices herewith quoted are nominal, there being little doubt that substantial concessions therefrom could be obtained on round lots. We quote, per net ton, Chicago, as follows: Water Pipe, 4-in., $35; 6 to 12 in., $34; 16-in. and up, $33, with $1 extra for Gas Pipe.

Coke.—The demand for Coke is extremely quiet, and in view of the further blowing out of blast furnaces and the lessened requirements for foundry use, no immediate betterment is looked for. Prices under the circumstances have declined, 72-hr. Connellsville Coke being now quoted at $2.50 to $2.75 per ton, at oven.

Old Material.—Despite the fact that prices seem to have touched bottom, the demand has not as yet shown any strong signs of improvement. Ordinarily, at the level now established, both consumers and dealers would be eager to take on tonnage, and they would probably do so now but for the very unsatisfactory financial condition which has enhanced the difficulty of settlements and disturbed usual credit facilities. Nearly all the recent railroad material that has come out has been disposed of at private sale, and has generally gone at less than market prices. As high as $22.50 has been offered for Car Wheels during the week, but there is very little tonnage offered in the open market. At this writing there is but one railroad list out for the week; this comprises 2800 tons offered by the Northwestern. Several lists aggregating a considerable tonnage will probably be presented next week. We quote per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails	$15.50 to $16.00
Old Steel Rails, rerolling	13.75 to 14.25
Old Steel Rails, less than 3 ft.	13.75 to 14.25
Relaying Rails, standard sections, subject to inspection	
Old Car Wheels	24.50 to 25.00
Heavy Melting Steel Scrap	22.00 to 22.50
Frogs, Switches and Guards, cut apart	12.00 to 12.50
Mixed Steel	12.00 to 12.50
	9.50 to 10.00

The following quotations are per net ton:

Iron Fish Plates	$14.00 to $14.50
Iron Car Axles	17.00 to 17.50
Steel Car Axles	17.00 to 17.50
No. 1 Railroad Wrought	11.00 to 11.50
No. 2 Railroad Wrought	10.00 to 10.50
Railway Springs	11.00 to 11.50
Locomotive Tires, smooth	17.00 to 17.50
No. 1 Dealers' Forge	9.50 to 10.00
Mixed Busheling	7.50 to 8.00
Iron Axle Turnings	7.50 to 8.00
Soft Steel Axle Turnings	7.50 to 8.00
Machine Shop Turnings	7.50 to 8.00
Cast Borings	5.75 to 6.25
Mixed Borings, &c.	6.00 to 6.50
No. 1 Mill	7.50 to 8.00
No. 2 Mill	6.75 to 7.25
No. 1 Boilers, cut to Sheets and Rings	8.00 to 8.50
No. 1 Cast Scrap	13.00 to 13.50
Stove Plate and Light Cast Scrap	12.25 to 12.75
Railroad Malleable	11.00 to 11.50
Agricultural Malleable	10.50 to 11.00
Pipes and Flues	8.75 to 9.25

Metals.—Of a fair amount of inquiries that developed during the week, but few actual orders resulted. These were mainly for small lots and immediate requirements, although a few sales of moderate amounts were made for delivery through the present month. While not much change was recorded in prices, the tendency has been generally lower. There is little demand for Spelter or Antimony, though Lead is moving somewhat better. We quote as follows: Casting Copper, 14½c.; Lake, 15c. to 15½c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 33½c.; small lots, 34¾c.; Lead, Desilverized, 4.50c. to 4.55c., for 50-ton lots; Corroding, 5.65c. to 5.75c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 5.50c.; Cookson's Antimony, 13c., and other grades, 11c. to 11½c.; Sheet Zinc is $7 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13c.; Heavy Copper, 13c.; Copper Bottoms, 12c.; Copper Clips, 12c.; Red Brass, 13c.; Yellow Brass, 10½c.; Light Brass, 6½c.; Lead Pipe, 4¼c.; Zinc, 4c.; Pewter, No. 1, 21c.; Tin Foil, 26c.; Block Tin Pipe, 28c.

Philadelphia.

PHILADELPHIA, PA., December 3, 1907.

A little more activity has developed in one or two grades of material, but buying of Iron and Steel is still confined almost entirely to requirements covering immediate needs. Financially, the situation looks a little better, and this has a tendency to improve the feeling in general business. We are still, however, a long way from the normal, and until conditions show a genuine improvement, business will no doubt be continued in a hand-to-mouth fashion. The month of December is expected to be quiet. Many plants under normal conditions withhold business this month, in view of annual stock taking and the closing of the year, and this together with the reduced demand, will, it is generally expected, make buying in almost every branch of the trade rather light.

Pig Iron.—A little better demand for some grades of Iron is in evidence. Buying, however, is mostly in small lots, and for prompt delivery only. With consumption falling off, melters have in many cases been unable to use the Iron coming in, and stocks have accumulated, particularly where the estimated requirements for the year had been contracted for. In such cases deliveries have been held up quite largely, while the stocks on hand are being worked up. In other cases, particularly in that of the foundries, the forward buying was hardly as pronounced, and while stocks are also being worked up, the accumulation has not been as great, and it is from this source that most of the recent business has developed. That these stocks are gradually decreasing, however, is brought out by the increased inquiry, but buyers will not come into the market very heavily under the existing conditions. There is still considerable improvement necessary in the financial situation, and while the betterment slowly grows, it will take some time for money matters to get back to normal, and until they do, the unsettled condition of business affairs will continue. The decrease in the production of Pig Iron has helped the situation materially, but production is still above the present rate of consumption, and until either consumption increases or production decreases to the level of consumption, it is hardly possible to look for any stiffening in prices. In most instances, it is believed that prices cannot recede much further, as many furnaces selling Iron at to-day's figures are doing so at a loss, and under present methods furnacemen will continue to blow out their stacks when they have caught up with the business in hand. There is evidently but little accumulation of Iron on the furnace banks, and producers will not pile any large tonnages on the current selling basis. Prices show but little change, and while there is a slightly better feeling prevalent as far as tonnage is concerned, it is difficult to forecast what prices will be. How badly a seller needs tonnage and who the buyer is, as well as the requirements, all have an important bearing on the situation and result in frequent slight variations in quotations on the same grades of Iron. Sales have had a wider range as far as tonnage is concerned. While carload and 100-ton lots predominate, there have been a few sales of No. 2 X Foundry Iron in lots ranging from 500 to 1000 tons, for delivery mostly in December, at prices ranging from $18.75 to $19, delivered. One lot of this grade, for delivery in small weekly quantities during December and the first half of the year, was sold at $19, delivered. The buyer who was in the market last week for 5000 tons of Basic Iron increased the quantity up to nearly 10,000 tons, which was done at close to $17.50, delivered, for December and January delivery. With this exception the demand for Basic has been quiet. Forge Iron has been sold in small lots, ranging from 75 to 300 tons, for prompt delivery, sales being mostly in the neighborhood of $17, delivered, although there would be no difficulty experienced in shading this price 25c. to 50c. a ton for some grades. No new business has developed in Low Phosphorus Iron, although sales of small lots of misfit Iron continue to be made at prices ranging from $22 to $23.50, according to analysis. There is still but little interest shown in Iron of any grade for future delivery, and while there has been some little inquiry, no new business has resulted. Quotations for deliveries in buyers' yards, eastern Pennsylvania and adjoining territory, for the remainder of the year, are named about as follows:

No. 2 X Foundry	$18.75 to $19.00
Gray Forge	16.50 to 17.50
Basic	17.50 to 17.75
Low Phosphorus	25.00 to 25.50

Ferromanganese.—The lack of demand continues, and prices show a further decline in the absence of business. Large consumers are holding up deliveries and scattered carload lots cover the business done. Prices for delivery in December are quoted at $49, Baltimore, but what could be done for next year is hard to say, as there is absolutely no demand.

Steel.—Buying is very meager, and the new business taken covers only small lots for prompt shipment. Mills continue to run at about half their capacity on orders received from day to day. Prices are nominally unchanged, $30 to $31 being quoted for Ordinary Steel with Forging Steel from $33 to $35. These prices, however, would no doubt be materially shaded if a buyer for a good tonnage came on the market.

Plates.—Orders are not large, but enough business comes in from day to day to enable plants to be kept running at about half their full capacity. A little more active demand has come out for Ship Plates, one of the Delaware River yards having received orders for two revenue cutters for the Government, while some larger vessels are being figured on. Prices continue unchanged, and range as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.85	1.90
Flange or Boiler Steel	1.95	2.05
Commercial Firebox	2.05	2.10
Marine	2.25	2.30
Locomotive Firebox Steel	2.35	2.40

The above are base prices for ¼-in. and heavier. The following extras apply:

	Extra per 100 lb.
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Structural Material.—A fair tonnage has been placed for miscellaneous material, mostly in small quantities, and mills continue fairly active. Prices are being firmly maintained, and range from 1.85c. to 2c., according to specification.

Bars.—There has been a little more inquiry for Bars in small lots, but business is still quiet, and mills continue in operation at reduced capacities. Prices are nominally unchanged, and range from 1.75c. to 1.80c. for best Refined Iron. Steel Bars are quoted at the same figure, but not much new business is coming out.

Sheets.—Buyers are placing orders for immediate needs only, and the volume of new business is small. Mills are not very actively engaged, and some are working on short time. Prices are unchanged, and are named as follows for mill shipments, a tenth extra being quoted for small lots: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 to 26, 3c.; No. 27, 3.10c., and No. 28, 3.20c.

Old Material.—Practically no business is being offered by consumers of Old Material. Mills in many cases still hold up shipments, and what few sales are made are mostly between dealers. Prices of several grades show a further decline, but sellers find it difficult to do business at any price, and quotations are hard to name. We quote bids and offers for prompt deliveries in buyers' yards nominally, as follows:

No. 1 Steel Scrap and Crops	$11.50 to $12.00
Low Phosphorus	16.00 to 16.50
Old Steel Axles	18.50 to 19.00
Old Iron Axles	23.00 to 24.00
Old Iron Rails	17.50 to 18.00
Old Car Wheels	19.00 to 20.00
Choice No. 1 R. R. Wrought	15.00 to 15.50
Machinery Cast	15.50 to 16.00
Wrought Iron Pipe	12.50 to 13.00
No. 1 Forge Fire Scrap	11.50 to 12.00
No. 2 Light Iron	8.00 to 8.50
Wrought Turnings	9.00 to 9.50
Stove Plate	12.50 to 13.00
Cast Borings	7.00 to 7.50
Grate Bars	13.00 to 13.50

Peter A. Frasse & Co., 94 Fulton street, New York, have opened a branch warehouse at 408 Commerce street, Philadelphia, for the sale of Shelby Steel Tube, Poldi Superior Tool Steels, Drill Rod, Music Wire, Poldi High Speed Drills, &c. The branch warehouse will only be used for the firm's specialties, and it is not the intention to carry the full line of supplies that is handled in New York.

Cleveland.

CLEVELAND, OHIO, December 3, 1907.

Iron Ore.—The last Ore cargoes for the season will start down the lakes at the end of this week. The December lake shipments will be very light this year as compared with last, when the movement was over 500,000 tons. It is doubtful if it will exceed 100,000 tons this year. Although figures are not yet available for November, it is believed that the shipments of November and December will aggregate close to those of a year ago, when they were about 4,200,000 tons. The total movement for 1907, including the all rail shipments, will probably be somewhat over 41,000,000 tons. Dock piles at Lake Erie ports are well filled with Ore, a large percentage of the shipments during the past month having been placed on the docks. Ore prices for next season are as yet being given no consideration, and it is not expected that anything will be done until the financial situation clears up. Furnacemen are content to wait and are making no inquiries about Ore. Nominal prices are as follows at Lake Erie docks, per gross ton: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range Non-Bessemer, $4.25; Mesaba Non-Bessemer, $4; Siliceous Bessemer, $2.75; Siliceous Non-Bessemer, $2.35 to $2.60.

Pig Iron.—The market shows no improvement. There is practically no demand for spot Iron, and a number of furnaces are accumulating stock piles. While no foundries are reported entirely shut down, it is estimated that they are being operated at an average of 60 per cent. or less of their full capacity. In spite of the fact that nearly every consumer has had shipments withheld, many of the foundries have accumulated considerable Iron in their yards. In view of these conditions the prospect of an improvement in the demand for spot Iron in the next few weeks is not promising. While no furnaces in this district have gone out of blast the past week, except furnace No. 1 of Pickands, Mather & Co., at Toledo, which was blown out Saturday, a number of merchant furnaces are expected to be closed down at any time, and it is almost certain that some of them will go out of blast before the end of the month. One local furnace has received good shipping orders for December—much better than last month—but that is the only favorable report received. Prices show a tendency toward further weakness. Local furnaces are now asking $19 for No. 2 Foundry, at furnace. The sale of a few car lots are reported in this territory at prices ranging from $18 to $20. A local interest continues to offer No. 2 Foundry Iron at $18 at its Eastern furnaces for spot shipment. Because of withhold orders many consumers will have enough Iron undelivered on their contracts at the first of the year to last them two or three months. One inquiry was received for 1000 tons of Southern Iron for delivery the first half of 1908. Only a nominal price was quoted. Quotations for the balance of the year, f.o.b. Cleveland, are as follows:

Bessemer	$19.90
Northern Foundry, No. 1	19.50
Northern Foundry, No. 2	19.00
Northern Foundry, No. 3	18.50
Southern Foundry, No. 2	$19.35 to 19.85
Gray Forge	18.90

Coke.—There is some demand for Foundry Coke in small lots. Prices on both grades are weaker, and production is being further curtailed. Furnace Coke is inactive, no sales being reported for next year's delivery. Furnace Coke for spot delivery is offered for $2.25, and probably could be bought at a lower price. We quote 72-hr. Connellsville Foundry Coke at $2.75 to $3, at oven.

Finished Iron and Steel.—While a better feeling prevails, and confidence has been largely restored, the local financial situation cannot be said to be much easier. Banks have not yet resumed currency payments, and are making few if any loans. As far as the Iron and Steel market is concerned no improvement is noted. One mill reports the closing of a contract for several hundred tons of Steel Bars for delivery the first half of next year, but outside of that the orders during the week were few, and for limited quantities, carload lots or less, for immediate needs. Specifications on contracts continue light. The demand for Iron Bars is limited, and two local mills are shut down this week, because of a lack of orders. Some of the mills are still continuing the policy of caution and are seeking no new orders, but simply taking what business is offered provided the purchaser's credit is satisfactory. Warehouse business shows a slight improvement over the previous week, but is still far from good. A small amount of Structural Material is being taken to carry out existing contracts, but no work that will require a considerable tonnage in the near future is in sight. Prices remain firm except on Iron Bars and Sheets, some mills making concessions of $2 a ton on Black Sheets and $1 per ton on Galvanized Sheets. We quote Iron Bars at 1.60c., Cleveland, for local orders or outside shipment. We quote Steel Bars at 1.70c., Cleveland, for carload lots, half extras; Beams and Channels, 1.80c., base, Cleveland, and Plates, ¼ in. and heavier, 1.80c., base, Cleveland. Regular prices on mill shipments of Sheets, carload lots, Cleveland, are as follows: Blue Annealed, No. 10, 1.95c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.85c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.20c.; Box Annealed, No. 28, 2.90c.; Galvanized, No. 28, 4.05c. Other jobbers' prices remain unchanged. We quote Steel Bars out of stock at 1.90c. to 1.95c., and Iron Bars at 1.95c. to 2c. Beams and Channels out of stock are 2.10c. to 2.15c., base. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount. Some bolt makers have made a slight reduction on their export prices to stimulate their foreign trade.

Old Material.—With a further weakening of prices some of the mills think that the bottom has about been reached and show a disposition to lay in stocks of Scrap. One local mill has purchased several hundred tons of Bushelling, and there are other inquiries in the market for quite a

large tonnage of the same grade. The demand for Scrap for immediate needs shows no improvement, the sales being very few and limited mostly to car lots. The mills that are running seem to have plenty of Old Material in stock to supply their immediate needs. Prices are mainly nominal, there not being enough transactions on which to base quotations. Dealers with Scrap that they must move are forced to accept very low prices. Some dealers are holding Scrap for better prices. The railroad offerings this week include some tonnage to be sold by the Erie. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails	$13.50 to $14.00
Old Iron Rails	18.00 to 19.00
Steel Car Axles	18.00 to 19.00
Old Car Wheels	19.00 to 20.00
Relaying Rails, 50 lb. and over	27.50 to 28.00
Relaying Rails, under 50 lb.	30.00 to 31.00
Heavy Melting Steel	12.50 to 13.00
Railroad Malleable	13.00 to 14.00
Agricultural Malleable	12.00 to 12.50
Light Bundled Sheet Scrap	10.00 to 11.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles	$19.50 to $20.00
Cast Borings	6.00 to 6.50
Iron and Steel Turnings and Drillings	7.50 to 8.50
Steel Axle Turnings	10.50 to 11.00
No. 1 Bushelling	11.00 to 11.50
No. 1 Railroad Wrought	12.00 to 13.00
No. 1 Cast	13.00 to 14.00
Stove Plate	11.50 to 12.00
Bundled Tin Scrap	10.00

Cincinnati.

CINCINNATI, OHIO, December 4, 1907.—(*By Telegraph.*)

Sentimentally, the Iron market may be said to be a little better in tone, but in the main conditions are much the same as last week, and nothing yet available to base any definite figures for a 1908 market. Dealers in Finished Material are still keeping close to shore in matter of stocks, and have apparently profited by the example afforded by the furnacemen whose sudden and conservative action in curtailing production has steadied prices far better than might have been expected considering the tremendous upheaval in stocks and the money market. Representatives of the leading furnaces in all of the leading Pig Iron producing fields are making frequent trips to the furnaces, and report a steady and increased blowing out. Altogether, the situation does not look as bad for 1908 as was predicted at the beginning of November, and the impression prevails very generally that the bottom has about been reached. The banks are gradually retiring the scrip issues. Money for payrolls is not nearly so difficult to negotiate as 10 days or two weeks ago. Several of the disturbing factors have been eliminated—namely, those furnaces which, because of the pressing need for money, have disposed of Iron at a sacrifice price are now out of blast and with comparatively small stocks. The strictly local melt is off fully 60 per cent., if not more. There is felt, however, in a consideration of foundry operations a sense of satisfaction over the record of but one absolute suspension. This is the Weber Company, which is now in the hands of the bankruptcy courts. A hearing is set for the 9th in this case, and if the creditors can agree the trustee will be named on this date. Foundry interests are anticipating relief in the matter of freight rates on Iron from the Southern districts as the result of a late move of the railroads. Representatives of the freight departments have been visiting foundrymen in this field, securing data and statistics on the melt, shipments, &c., with a view, it is said, of rearranging the rates. Rumors are flying thick of sales of Iron at $14 and $14.50, at furnace, on No. 2 Southern without confirmation. A number of sales of small tonnage are traced at $15, and agents frankly announce that price as having been done, and that it can be done on immediate delivery. The last few hours have brought out some rather sensational rumors, involving sales of large tonnages at prices ranging from $13 to $14.50, but one of the largest agencies here, usually regarded as making lowest prices, insists on $15.25 as the very best that can be done for prompt shipment. There are some fairly good inquiries out for December and first quarter and half of next year, among them one for 10,000 tons for the International Harvester interests for December, January and February delivery. The Battle Creek, Mich., inquiry for 15,000 to 25,000 tons of No. 2 Southern Iron for the first four months is expected to be placed to-day, although there is a belief that the inquiry is more of a feeler than anything else. An inquiry for 10,000 tons of Malleable comes from Dayton, Ohio, and a small tonnage of Valley Iron is reported at Toledo. As a straw, it may be noted that one of the largest local agencies sold last week an aggregate of 3000 tons on a $15, Birmingham basis. Local offices are keeping carefully posted on furnace conditions, which to-day show but three stacks in blast in the Hanging Rock District—the Nellie at Ironton and one Ashland and the Norton at Ashland—but two or three at Wellston and but 15 of the Southern or Birmingham District. Those out of blast in the Hanging Rock District are Union, Bird, Belfont, Sarah, and one at Ashland; taking the entire field which supplies this market, 50 per cent. of the stacks in blast on November 1 are now out. There is some difficulty in placing the responsibility for price cutting, the Southern Steel Company being exonerated of the charge, which is felt to have originated from receivership conditions, because of a recent refusal on a tonnage of about 17,000 of Nos. 3 and 4 and Forge at $15. It is extremely difficult to say what could be done for any given delivery on a round tonnage, recalling the conflicting facts, and is safe to assume that each transaction is based on some contributing detail that would not ordinarily enter into the buying of Iron. In low grades there is no buying to fix a market. The last sale in this market on Forge was at $13.50, Birmingham. Northern Iron is unchanged, and the price is $18 on No. 2, at furnace, while 8 per cent. Silicon remains $26, at furnace. For the balance of 1907 we quote, f.o.b. Cincinnati, in which are figured freight rates from Birmingham $3.25, and from the Hanging Rock District $1.20, as follows:

Southern Coke, No. 1	$18.50 to $19.00
Southern Coke, No. 2	18.00 to 18.50
Southern Coke, No. 3	17.50 to 18.00
Southern Coke, No. 4	17.00 to 17.50
Southern Coke, No. 1 Soft	18.50 to 19.00
Southern Coke, No. 2 Soft	18.00 to 18.50
Southern Coke, Gray Forge	16.25 to 16.75
Southern Coke, Mottled	16.00 to 16.50
Ohio Silvery, 8 per cent. Silicon	27.20 to 27.70
Lake Superior Coke, No. 1	19.70 to 20.20
Lake Superior Coke, No. 2	19.20 to 19.70
Lake Superior Coke, No. 3	18.70 to 19.20

Car Wheel Irons.

Standard Southern Wheels	$28.25 to $29.25
Lake Superior Car Wheels	27.70 to 28.00

Coke.—The market is nominal, with practically nothing doing in Furnace brands, and only such a movement of Foundry as is necessary to take care of contracts and of the light melting. Strictly Connellsville Foundry is still quotable at $2.90 to $3. Curtailment of production is keeping pace with the blowing out of blast furnaces.

Finished Iron and Steel.—Buying from stores continues, and prices are usually being well maintained, both at mills and stores. Iron Bars are reported a little easier, and small lots from store are selling at 1.85c., base, with Steel Bars about the same. Blue Annealed Sheets have been cut a little. Collections are reported good. Dealers quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.80c., with half extras; small lots from store, 1.85c., base, full extras; Steel Bars, carload lots, 1.75c., base, half extras; small lots from store, 1.85c., base, full extras; Base Angles, carload lots, 1.75c.; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; Sheets, No. 16, carload lots, 2.20c.; small lots from store, 2.50c.; No. 14, carload lots, 2.10c.; small lots from store, 2.40c.; Steel Tire, 4-in. or heavier, carload lots, 1.95c., base; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.25c.; Sheets, No. 10, 2c., carload lots; 2.30c. from store; Sheets, No. 12, 2.05c., carload lots; 2.35c. from store; Light Sheets, Black, No. 28, carload lots, 2.75c.; Galvanized, No. 28, 3.90c.

Old Material.—This market is in a most unsatisfactory condition, and the tendency is to still lower values, although those current have already been designated as ridiculously off. A careful inquiry from all dealers brings out the following quotations as the best obtainable, and are f.o.b. Cincinnati:

No. 1 Railroad Wrought, net ton	$10.50 to $11.00
Cast Borings, net ton	5.00 to 6.00
Steel Turnings, net ton	6.00 to 7.00
No. 1 Cast Scrap, net ton	13.00 to 13.50
Burnt Cast and Wrought, net ton	9.00 to 9.50
Old Iron Axles, net ton	17.00 to 18.00
Old Iron Rails, gross ton	15.00 to 16.00
Old Steel Rails, long, gross ton	11.50 to 12.00
Relaying Rails, 56 lb. and up, gross ton	21.00 to 22.00
Old Car Wheels, gross ton	18.00 to 19.00
Mining Car Wheels, gross ton	10.50 to 11.50
Low Phosphorus Scrap, gross ton	14.00 to 14.50

Birmingham.

BIRMINGHAM, ALA., November 30, 1907.

Pig Iron.—Owing to the improvement in monetary conditions, together with some inquiries reported which are believed to be bone fide, it may be said that a more optimistic feeling prevails, although no transactions are recorded which would indicate any activity at an early date. Melters are apparently as chary of negotiations as at any time during the past 30 days, and sales continue to be made on the hand to mouth order; but more interest is in evidence, and it is believed that when bottom prices have been established some buying will result. By reason of the numerous cases where shipment against contracts has been referred, it is evident that leading producers will enter the new year with quite a tonnage to be shipped which was booked at former prices. This being the case, it does not seem probable that concessions will be made by the larger interests, who are adhering to their former quotations of $18.50 on a No. 2

Foundry basis, notwithstanding reductions by smaller concerns, but it is generally conceded that lower prices will exist, and the theory is advanced that requirements for the first quarter of 1908 will be met with $15 Iron. With the exception of one lot of 1000 tons Gray Forge, for early delivery, which is reported sold at $14, f.o.b. furnace, sales for the week have been confined to carload lots and have apparently been made with variations in prices, but it is not believed that a further decline has been suffered, and no doubt $16.50 is the best could be done on a No. 2 Foundry basis. During the week the furnace operated by the Central Iron Company, at Holt, Ala., has been blown out. It is understood, however, that the suspension is due to needed repairs, and as soon as they can be made operation will be resumed.

Cast Iron Pipe.—Owing to the development of new business during the week, market conditions are materially improved and producers are very much encouraged as to the outlook. New lettings now advertised are as follows: New Britain, Conn., 10,000 tons; Chicago, Ill., 5500 tons, and the annual contract for the city of Baltimore, Md. In addition to this there are a number of smaller contracts to be let, so that, taken with the lettings for Arizona points, the tonnage now in sight is quite attractive. With this in view, it seems highly probable that no further curtailment of production will be noted, and no doubt present prices will be maintained. Quotations on Water Pipe are approximately as follows, per net ton, f.o.b. cars here: 4 to 6 in., $30; 8 to 12 in., $29; over 12-in. average, $26, with $1 per ton extra for Gas Pipe. On large municipal contracts these prices are probably shaded.

Old Material.—There is practically no market at present. Consumption has decreased materially during the week and only a small tonnage has been sold. No inquiries are reported, and consumers are apparently uninterested as to requirements for 1908. Owing to the lack of demand, it cannot be ascertained just what the market price is, but former quotations are being asked and we quote the following prices per gross ton, f.o.b. cars here:

Old Iron Rails	$22.00 to $22.50
Old Iron Axles	18.50 to 19.00
Old Steel Axles	17.00 to 17.50
Old Car Wheels	20.50 to 21.00
No. 1 Railroad Wrought	17.50 to 18.00
No. 2 Railroad Wrought	13.00 to 13.50
No. 1 Country Wrought	14.50 to 15.00
No. 2 Country Wrought	12.00 to 12.50
Wrought Pipe and Flues	13.50 to 14.00
Railroad Malleable	14.00 to 14.50
No. 1 Steel	13.50 to 14.00
No. 1 Machinery Cast	14.25 to 14.75
Stove Plate and Light Cast	10.25 to 10.75
Cast Borings	7.75 to 8.25

San Francisco.

SAN FRANCISCO, CAL., November 27, 1907.

Notwithstanding the financial stringency, from which the city is now rapidly recovering, building construction is being rushed with favorable weather for the rapid erection of Steel. The leading manufacturers' agents and representatives of the large Eastern Iron and Steel companies take a hopeful view of the local situation and are not disposed to cut prices. The depressed financial situation in San Francisco, of late, has acted as a decided check upon mercantile operations of all kinds, but the underlying conditions are absolutely sound and the purchasing power of the country is unimpaired. In the Iron and Steel lines wholesale jobbers are not laying in heavy stocks yet, as they do not know where the money is to come from. The City Electric Company, which recently started up an electric light and power plant in the north end, with two 2500-kw. steam turbine units, has closed a contract for an additional 6000-kw. Westinghouse-Parsons turbo-generator. A construction engineer who has just returned from an Eastern trip says that San Francisco, in spite of the tightness of money, looks better as far as construction work is concerned than any of the cities he visited. For the month of October San Francisco, in point of building operations, held third place out of 50 large cities. New building contracts for that month amounted to $4,906,430, as compared with $6,046,369 for the same month of 1906. New York ranked first, with $12,567,910; Chicago second, with $4,957,150; Cleveland fourth, with $2,555,397. Seattle, Philadelphia, St. Louis, Milwaukee, Detroit, Los Angeles and St. Paul follow in the order named. Los Angeles, Seattle, Tacoma and Spokane combined, for the month of October, had a total of $3,774,026 new building contracts.

Pig Iron.—There is only a little hand to mouth buying of Pig Iron by local foundries, and it is hard to fix a price. Several shipments from Europe have arrived and 15 more vessels are afloat. This means that the supply will be ample for all local needs for some time to come. These vessels and several more now loading will arrive within the next six months. The best Scotch and English Iron is worth about $29 here. Chinese Pig Iron is gaining a good foothold here.

Bars.—The principal manufacturers' agents do not expect much improvement in orders for Bars until after the first of the year, when the jobbers who have let their stocks run down will have completed their inventories. Prices are unchanged. Several of the large jobbing firms in Iron and Steel Bars and allied lines have withdrawn a number of traveling men from the road, and have laid off some of their salesmen and office clerks in this city.

Structural Material.—While there is still a tendency to delay closing contracts for Structural Steel until the money is actually in hand for its purchase, there are several good inquiries, including two for Steel frame buildings, each requiring about 2000 tons of Steel. One of these orders will probably be placed soon, while the other may depend upon the anticipated improvement in finances. No new orders have been taken for Structural Steel for San Francisco buildings since the Milliken Brothers' receivers took the contract for the Steel for the large new structure which is to be erected for the White House. All but 500 tons of the 2000 tons of Steel required for the 12-story First National Bank Building are on hand, and as soon as a few more carloads have arrived the erection will be commenced. Engineers are completing the plans for the large Steel bridge for foot passengers which is to be erected at once at the foot of Market street. It will extend about 400 ft. eastward, spanning East street, and will connect with the second story of the Union Ferry Depot, so that the 20,000,000 persons who cross the bay on ferryboats in the course of a year can reach the upper deck of the boats without threading their way through the teams and cars on East street. About 200 tons of Steel will be required for this structure, which is to be erected by the city and the State Harbor Commission.

Cast Iron Pipe.—There has been a general drop in prices asked by the various companies competing for the Cast Iron Pipe business of the Pacific Coast. The reduction is a natural consequence of strong competition when money is scarce and inquiries are consequently restricted. A number of new projects are in contemplation on the coast, which will require a good deal of Pipe if carried through. The city of Pasadena is preparing to vote bonds aggregating $975,000 for municipal enterprises, which include the improvement of the present water system at a cost of $200,000, and the expenditure of $45,000 for additional fire protection. The Mayor proposes, when all of the water works plants have been acquired by the city, to construct a large storage reservoir in the mountains. From this it is his intention to construct a large central water main, which will extend several miles to a connection with the 18-in. main on Colorado street, in the business district. Prices per net ton, f.o.b. cars San Francisco, are about as follows: 6 to 8 in., $27 to $28; 12 to 20 in., $26.50 to $27.50; 4-in., $26 to $27.

Sheets.—The market is inactive and prices are not being quoted under the circumstances, but are practically unchanged. Owing to the financial conditions, the sheet metal workers have been laying off men, and as some of the contractors have been unable to secure money to complete their work on buildings, work is slack in these lines. There is consequently, but a light demand for Galvanized Sheets, and no basis on which to establish a price. There is enough stock on hand for the present needs of the trade.

Wire Products.—All of the buyers of standard Wire products are somewhat unsettled, owing to the financial situation, and are buying as little as they can get along with. Notwithstanding this state of things, the jobbers are facing a great number of orders on the coast, but mostly small ones, for early delivery. Prices are well maintained. The general feeling is that this crisis will pass and that there will be a gradual resumption of business. Chicago advices from the general sales agent of one of the largest concerns say that if the consumption proves to be insufficient to take care of the production, the goods will not be manufactured. No effort will be made to force sales on the Pacific Coast or elsewhere. Conditions in other lines—Electrical Wires, Wire Rope and Specialties—have also been affected by the financial stringency. The Woven Wire Fencing lines are very active. All stocks are badly broken on the coast. There is quite a movement of Wire Nails, but all in small quantities.

Merchant Pipe.—There is not much activity in the local demand for Merchant Pipe under present conditions. Jobbers are fairly well supplied. Discounts on Steel Pipe are about as follows on jobbers' carloads:

	Steel. Black.	Steel. Galv.
	%	%
⅛ and ¼ in.	58.5	42.5
⅜ in.	60.5	46.5
½ in.	62.5	50.5
¾ to 6 in.	66.5	56.5
7 to 12 in.	63.5	48.5
Extra strong, plain ends:		
⅛ to ⅜ in.	51.5	39.5
½ to 4 in.	58.5	46.5
4½ to 8 in.	54.5	42.5
Double extra strong, plain ends:		
½ to 8 in.	47.5	36.5

Iron and Steel Scrap.—There is practically nothing doing in Iron and Steel Scrap in this market. None of the local foundries is buying except in very small quantities, and

wholesale dealers are not anxious either to buy or sell under present conditions. Prices are nominally $2 or more off those quoted a month ago.

Pittsburgh.

PARK BUILDING, December 4, 1907.—(*By Telegraph.*)

Pig Iron.—At this writing the United States Steel Corporation has 51 blast furnaces out and 6 banked, while of the 19 merchant blast furnaces in the Mahoning and Shenango valleys that have no Steel connections and sell their Pig Iron in the open market, 5 stacks are idle. This does not include the Republic Iron & Steel Company, which has 6 furnaces in the valleys, of which 4 are idle. The only transaction in Pig Iron during the week of any moment is the reported purchase of 1000 tons of Basic for prompt delivery by a Cleveland Steel interest, at $17.50, Valley furnace, or $18.40, Cleveland. Another small sale of Basic of about 200 tons is reported at $17, Valley furnace. There is absolutely no inquiry for Bessemer Iron, but an occasional small lot of Foundry for spot shipment is sold. Quotations on Pig Iron are merely nominal, as follows: Bessemer Iron, $19; Basic, $17.50; No. 2 Foundry, $18 to $18.50, all at Valley furnace, with 90c. freight to Pittsburgh or Cleveland. There is no inquiry whatever for Forge Iron, which we quote nominally at $18, Valley furnace, or $18.90, Pittsburgh.

Steel.—There has been a further cutting down of output in Steel, the Carnegie Steel Company now having six plants entirely idle—namely, Bellaire, Mingo Junction, Donora, Columbus, North Sharon and the Ohio Works at Youngstown, the last named having just closed. The output of Steel at its Edgar Thomson, Homestead, Shenango, Clairton and South Sharon works has been cut down more than half. The Republic Company's Bessemer plant at Youngstown is running this week, but the Youngstown Sheet & Tube plant is still idle. There is no demand for Steel, and in the absence of actual sales we quote Bessemer and Open Hearth Billets at $28 and Forging Billets at about $30, Pittsburgh.

(*By Mail.*)

The best that can be said for the situation this week is that sentiment is better and the feeling more hopeful. Restriction in output of Pig Iron, Steel and all kinds of Finished Material goes steadily on, and at this writing amounts to at least 50 per cent. The United States Steel Corporation has 51 furnaces out of blast and six banked. The Carnegie Steel Company has six of its Steel plants closed down tight. There is no improvement in specifications, and shipments on the average do not represent more than 40 per cent. of capacity. It is generally believed that after the first of the year money conditions will be better, and if this proves the case some improvement may be seen in the Steel trade. The local business situation in Pittsburgh is bad and producers of material realize that to try to force sales under present conditions is suicidal, and are giving more time in trying to make collections on what has been sold than in attempting to get fresh orders. There has not been a single failure in the Iron trade in the Pittsburgh District, however, and none is expected, as the manufacturers have had three very good years and are said to be in fine condition to weather the storm that the trade is now passing through.

Ferromanganese.—There is practically no demand, most large consumers of Ferro either being closed down entirely or in part, so that the consumption is lighter than for some time. Reports are that foreign 80 per cent. has been sold at $51, Pittsburgh, but there were exceptional reasons for making this low price. We quote 80 per cent. English at $52, Pittsburgh.

Muck Bar.—The situation is very quiet. We quote Muck Bar of the best grade, made from all Pig Iron, at nominally $32, Pittsburgh, but if any business was offering it is probable this price would be shaded.

Steel Rails.—No orders of any moment for Standard Sections are being placed. While the financial situation is clearing up, it has not yet reached a condition to enable railroads to get money on favorable terms with which to buy Rails and other equipment. The Edgar Thomson mill of the Carnegie Steel Company is being operated to about one-half capacity, but will probably close at the end of the year to allow needed repairs to be made, which have been contemplated for some time. The demand for Light Rails is only fairly active. Prices on Light Rails, which are still being cut about $2 a ton or more by the mills rerolling Rails, are as follows: 25 to 45 lb., $30; 20-lb., $31; 16-lb., $32; 12-lb., $34; 10-lb., $36, and 8-lb., $40. We quote Standard Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

Plates.—New demand for Plates is still confined to small lots for prompt shipment, and there is no disposition on the part of consumers to make contracts. A large tonnage is still being shipped out to the Steel Car interests, but the demand from this source will heavily decrease after the first of the year, as some of the Steel Car concerns will then be short of work, unless more car orders are placed in the meantime. None of the large Plate mills is pushing output, preferring to cut down production to meet actual demand and specifications, and thus prevent accumulation of heavy stocks. Prompt deliveries of both Universal and Sheared Plates can now be obtained. In certain sections prices of Plates are being slightly shaded by a few mills, but the market on the whole is being well maintained. We quote: Tank Plates, ¼-in. thick, 6¼ in. up to 100 in. wide, 1.70c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than ¼-in. to and including 3-16-in. Plates on thin edges	
Gauges Nos. 7 and 8	$0.10
Gauge No. 9	.15
Plates over 100 to 110 in.	.25
Plates over 110 to 115 in.	.05
Plates over 115 to 120 in.	.10
Plates over 120 to 125 in.	.15
Plates over 125 to 130 in.	.25
Plates over 130 in.	.50
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	1.00
Complete Circles	.10
Boiler and Flange Steel Plates	.20
"A. B. M. A." and ordinary Firebox Steel Plates	.10
Still Bottom Steel	.20
Marine Steel	.30
Shell grade of steel is abandoned.	.40

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Structural Material.—The local situation is quiet. The Memorial Building is the only large job in sight in this district, but has not yet been given out. An extension to a bridge over the Monongahela River has been placed, but involves only 150 tons. Some of the Structural mills are short of work and the same is true of the fabricating concerns. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x ¼ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees., 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c.; Bulb Angles and Deck Beams, 2c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—The output of Sheets continues to be restricted to meet actual demand as nearly as possible, and none of the large mills is running full, but only operating about half time, while some mills are entirely closed waiting for orders to accumulate. It is believed that the demand for Sheets will show material betterment after the first of the year, especially if the financial situation has cleared by that time. The tone of the market is fairly strong, but on the lighter gauges of Black Sheets and Roofing Material prices are sometimes shaded to the extent of not over $2 per ton. Regular prices are as follows: Blue Annealed Sheets, No. 10 gauge and heavier, 1.85c.; Nos. 11 and 12, 1.90c.; Nos. 13 and 14, 1.95c.; Nos. 15 and 16, 2.05c.; Box Annealed, Nos. 17 to 21, 2.35c.; Nos. 22 to 24, 2.40c.; Nos. 25 and 26, 2.45c.; No. 27, 2.50c.; No. 28, 2.60c.; No. 29, 2.75c.; No. 30, 2.85c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.65c.; Nos. 12 and 14, 2.75c.; Nos. 15 and 16, 2.85c.; Nos. 17 to 21, 3c.; Nos. 22 and 24, 3.15c.; Nos. 25 and 26, 3.35c.; No. 27, 3.55c.; No. 28, 3.75c.; No. 29, 4c., and No. 30, 4.25c. We quote No. 2 gauge Painted Roofing Sheets at $1.85 per square, and Galvanized Roofing Sheets, No. 28 gauge, $3.25 per square, for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances.

Tin Plate.—The amount of new business being placed is light and the output has been heavily curtailed. The American Sheet & Tin Plate Company is operating only about 20 per cent. of its mills making Tin Plate products, while most of the independent mills are running half time or less. The market, nevertheless, is firm. We quote $3.90 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days.

Iron and Steel Bars.—The mills continue to reduce output of both Iron and Steel Bars to conform to actual demand as closely as possibly, and also to prevent accumulation of heavy stocks. The Brown-Bonnell mill of the Republic Iron & Steel Company, which was closed last week, is on again this week, but the company has several of its Western mills idle. Specifications are coming in only fairly well, and a good deal of tonnage has been held up until the situation clears. We quote Steel Bars at 1.60c., base, Pittsburgh, and Iron Bars at 1.60c., Pittsburgh, either for delivery in the Pittsburgh District or for Western shipment.

Spelter.—There has been a violent break in prices, and prime grades of Western are reported to have been offered the past week as low as 4.50c., St. Louis, equal to 4.62½c.,

Pittsburgh. This is the lowest price Spelter has touched in a long time.

Hoops and Bands.—Very little new tonnage is being placed, but specifications against contracts are fair, and we are advised that prices are being maintained. We quote Steel Hoops, 2c., and Bands for all purposes at 1.60c., base, half extras as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of $2 a ton being charged for less than carloads.

Spikes.—A fair demand for the smaller sizes is noted, but new business in Railroad Spikes is very light, buying being practically suspended. We quote Railroad Spikes at $1.90 to $1.95, and the smaller sizes at $2.05 to $2.10 per 100 lb., f.o.b. Pittsburgh.

Merchant Steel.—Some small lots for early shipment are being placed, but the general situation is quiet and specifications against contracts are being held up. The demand for shafting is light, but prices are, in the main, being observed. We quote: Cold Rolled Shafting at 54 per cent. off in large lots and 48 per cent. off in carload lots, delivered in base territory; Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades, and 10c. and upward for special grades.

Merchant Pipe.—New demand is for small lots only, and a fair amount of tonnage is being placed, but the Pipe mills are now pretty well caught up on back contracts, and plants are shutting down to prevent accumulation of stocks. Two of the leading Steel Pipe mills are entirely closed this week, while others are running to half capacity. The Manufacturer's Light & Heat Company has recently placed orders for five to six miles, and the Pure Oil Company is inquiring for about three miles of Casing. Prices on Steel Pipe are firm, but on Iron Pipe are considerably shaded. The net discount on Steel Pipe to the large trade on ¾ to 6-in. is 74 and 5 per cent. off list, while on Iron Pipe ¾ to 2-in., 71 and 5 per cent., and over 2 to 6 in., 70 and 5 per cent. are quoted. Discounts on Steel Pipe are as follows:

Merchant Pipe.

	Jobbers, carloads. Steel.	
	Black.	Galv.
	%	%
⅛ to ¼ in.	65	49
⅜ in.	67	53
½ in.	69	57
⅝ to 6 in.	73	63
7 to 12 in.	70	55
Extra strong, plain ends:		
⅛ to ¾ in.	58	46
½ to 4 in.	65	53
4½ to 8 in.	61	49
Double extra strong, plain ends:		
½ to 8 in.	54	43

To the large trade all above discounts are subject to 1 point on the base, and 5 per cent. on the net.

Boiler Tubes.—New orders are very light, especially on Railroad Tubes, and prices are being shaded. Discounts on Merchant Tubes are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in.	42	47
1¾ to 2¼ in.	42	59
2½ in.	47	61
2¾ to 5 in.	52	65
6 to 13 in.	42	59

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Coke.—There is practically no new demand for either Furnace or Foundry Coke, and every day more ovens are being closed down in the Connellsville region for lack of orders. One plant closed last week that had not been idle before for about seven years. The H. C. Frick Coke Company has blown out nearly 70 per cent., or about 14,000, of its ovens, while the independent Coke operators have reduced output fully 60 per cent. as compared with a month ago. The output of Coke last week in the Upper and Lower Connellsvlile regions was less than 200,000 tons, as against an output of about 425,000 tons four or five weeks ago. The nominal price of Connellsville Furnace Coke is about $2 per ton and of 72-hr. Foundry about $2.50 per ton, at oven.

Iron and Steel Scrap.—The Scrap trade is pretty badly demoralized and very little is moving. The Scrap lists of the Baltimore & Ohio and Pennsylvania railroads, just issued, comprise an enormous tonnage of all kinds. Bids on the Baltimore & Ohio list are to be in on December 9 and on the Pennsylvania list on December 10. The results of these sales will give a pretty clear idea of present conditions in the Scrap trade and the low prices ruling. Dealers quote nominally as follows: Heavy Steel Scrap, for Pittsburgh, Sharon or Steubenville delivery, $13.50 to $14; No. 1 Railroad Wrought Scrap, $14; No. 2, $13.50; No. 1 Cast Scrap, $15 to $15.50; Bundled Sheet Scrap, $11.50 to $12; Cast Iron Borings, $7 to $7.50; Rerolling Rails, $14 to $14.25; Low Phosphorus Melting Stock, $17.50 to $18; Old Steel Rails, short pieces for open hearth use, $13.50 to $14; No. 1 Busheling Scrap, $13; No. 2, $10; Steel Axles, $19 to $19.50; Iron Axles, $23 to $23.50; Standard Sheet Bar Crop Ends, $16.50 to $17; Stove Plate, $11.50 to $12 net ton; Grate Bars, $13. All above prices are per gross ton, f.o.b. Pittsburgh, unless otherwise stated, and are purely nominal in the absence of actual sales on which to base quotations.

New York.

NEW YORK, December 4, 1907.

Pig Iron.—There is a fair demand for small lots for prompt delivery, and at least one round lot has been placed. There have been indications of some pressure in New England, but on the whole the attitude of the furnace interests is to withdraw from the market and blow out or bank, rather than make marked concessions. Southern Iron has been lowered in price, until the possibility of its reappearing in this market is in sight. We quote Northern Iron, tidewater, $19.25 to $20 for No. 1 Foundry, $18.25 to $18.75 for No. 2 Foundry and $17.50 to $18.25 for No. 2 Plain. Alabama Irons are quoted nominally $19.50 to $20 for No. 1 Foundry and $19 to $19.50 for No. 2 Foundry.

Steel Rails.—While no important business has been booked in the week, one system is figuring on its supply for 1908, and the tonnage will probably soon be entered.

Structural Material.—The November contracts taken by the American Bridge Company amounted to about 25,000 tons, or slightly more than in October. This company closed last week the Steel work on the new car barn for the New York City Railway Company, 3500 tons. It has also taken the Madison avenue bridge over the Harlem River, amounting to 2500 tons. The bids for the Manhattan bridge approach—15,000 to 16,000 tons—will be received December 9 instead of December 16, as originally announced. The financial crisis has not altogether put an end to figuring on new construction. An uptown office building of 21 stories, on Park avenue, from Thirty-third to Thirty-fourth street, an apartment hotel, and a new building on the Fifth Avenue Hotel site are examples of work that is in architects' hands, though the time of actually beginning construction is indefinite. Something like 100,000 tons of projects can be counted up in New York City, on which nothing is likely to materialize for some months. Low prices are made in all current bids for fabrication. On the Memorial Building at Allegheny, Pa., for which bids were submitted recently, the high bid was $150,000 and the successful bid about $130,000. About 1200 tons of Steel will be needed. Naturally deliveries from mills are becoming prompt beyond anything heretofore known this year, but Structural mills have not shown as great a falling off in specifications as has been seen in some other lines. We quote mill shipments, tidewater deliveries, as follows: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.91c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

Bars.—Buying is on an exceedingly limited scale, and the larger mills are continuing their policy of closing, instead of reducing prices with the hope of securing business. The usual quotation on either Iron or Steel Bars is 1.60c., Pittsburgh, or 1.76c., tidewater. Some of the small mills making a limited range of sizes are selling Bar Iron at a slightly lower price.

Plates.—While inquiries are somewhat more numerous, the actual sales of Plates can hardly be said to be any larger. Prices are continued as follows for tidewater delivery: Sheared Tank Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—The usual winter dullness prevails, being, of course, intensified by the unsatisfactory financial conditions, which check consumers who might be inclined to open negotiations for spring delivery. Foundries are either closed or running at only part capacity. Unless material reductions are made in the price of Pig Iron it is likely that little will be done this winter in making a stock of Pipe for the spring trade. Carload lots of 6-in. continue to be quoted at $30 per net ton at tidewater.

Old Material.—Transactions are less than the slight movement noted for the past week or two. Even business in Foundry stock has fallen off. Heavier offerings of Old Material are being made by railroad companies in their efforts to secure cash. The greater supply thus in sight has caused prices to recede further, and almost all grades are 50c. to $1 a ton lower. Relaying Rails are very weak, with bids being steadily reduced. Steel Melting Scrap has been offered to Steel works in eastern Pennsylvania at $11, delivered, without accomplishing sales. Local brokers have practically ceased dealing, showing that the short interests in the market have been well covered. The accumulations in this vicinity are light, however, and very little is being forced on the market. At the same time a great many consumers have either shut down or are running at less than 50 per cent. of their capacity. The following range of prices

is given as the closest approximation which can be made at present, per gross ton, New York City:

Old Girder and T Rails for melting	$9.00 to $9.50
Heavy Melting Steel Scrap	9.00 to 9.50
Old Steel Rails, rerolling lengths	11.00 to 11.50
Relaying Rails	19.00 to 20.00
Old Iron Rails	14.50 to 15.00
Standard Hammered Iron Car Axles	20.00 to 20.50
Old Steel Car Axles	15.00 to 15.50
No. 1 Railroad Wrought	11.50 to 12.00
Iron Track Scrap	10.00 to 10.50
No. 1 Yard Wrought, long	10.00 to 10.50
No. 1 Yard Wrought, short	9.50 to 10.00
Light Iron	4.50 to 5.50
Cast Borings	4.50 to 5.50
Wrought Turnings	6.50 to 7.00
Wrought Pipe	8.50 to 9.00
Old Car Wheels	18.00 to 18.50
No. 1 Heavy Cast, broken up	13.00 to 13.50
Stove Plate	11.50 to 12.00
Grate Bars	9.50 to 10.00
Malleable Cast	12.00 to 12.50

Metal Market.

NEW YORK, December 4, 1907.

Pig Tin.—Another week of light business, with unimportant price changes, constitutes the record in the Tin trade. It looks as though business in December would be small in anticipation of stock taking time. Supplies are little, if any, better, although the steamship Hudson is now delivering some at about ¼c. under the spot market. The price changes for 5-ton lots are as follows:

	Cents.
November 27	31.15
November 29	30.55
December 2	29.85
December 3	30.10
December 4	30.10

Were it not for the scarcity of spot, the price would probably range below 30c. London houses are not disposed to ship Metal here with sterling exchange ruling so unfavorably against them. There can be no doubt that stocks are piling up in the far East and it is only a question of time when these will come on the market. Stocks in the United States, which are small, are largely concentrated in the hands of a very few strong interests. The London market is firm to-day, closing at £133 10s. for spot and £134 10s. for futures. The statistical position at the end of November was unfavorable to holders of Pig Tin. Deliveries into consumption in this country were the smallest of any month in a number of years, amounting to 1550 tons. The total deliveries for the first 11 months of the year show a decrease of 4050 tons, compared with the same time last year. Despite the small arrivals, amounting to 1117 tons, stocks in the United States amount to 1110 tons, a decrease of 400 tons compared with the end of October. The total visible supply for Europe and the United States at the end of November was 12,840 tons, an increase of 1800 tons compared with the previous month and an increase of approximately 500 tons compared with the same date last year. The arrivals this month amount to but 55 tons, and there are afloat for American ports 1125 tons.

Copper.—There is an absence of buying, either of small or large lots, for present or future needs. The market is no weaker; neither is it stronger. Lake can be had at 14c., in any quantity, and bids at 13.75c. are frequent. Electrolytic ranges between 13.62½c. and 13.87½c. Casting is quoted at 13.37½c. to 13.62½c. The steady closing down of mining properties will do much to strengthen the situation. On the other hand, the resumption of operations in the Boundary District of Canada was brought about by reductions in the cost of supplies and concessions made by labor. A continuation of this process in other properties will reduce the manufacturing cost of Copper so that still further revisions in price will be logical. However, not all of the operating companies are in the fortunate position of this one. A further reduction of dividends by old established companies indicates the conservative action of making expenditures keep pace with profits. The export trade is excellent, the outgo for November making a new high record of 33,778 tons from Atlantic ports. The total exports for the first 11 months this year aggregate 190,850 tons, being 250 tons greater than during the same time last year. Of course a large amount of this exported metal is going into storage in Europe. The London market closes to-day at £61 for spot and £61 10s. for futures.

Waterbury Average.—The Waterbury Average for Copper for November was 13.62½c.

Ferroalloys.—The market is dull, with very little new business. For 50 per cent. Ferrosilicon $95 is asked, but lower quotations could be secured on a desirable quantity. Ferromanganese can be had at $50, Baltimore, and $52, Pittsburgh.

Pig Lead.—Another decline in the price of Lead has been recorded this week, and shipments can be had at 4.12½c., New York, although 4.25c. is asked for spot. In St. Louis the market is lower, at 4c. The American Smelting & Refining Company to-day declared its regular 2 per cent. dividend on the common stock.

Spelter.—A further cut in the price of Spelter has been made, and prime Western brands can now be had at 4.60c. to 4.65c., New York, and 4.45c., St. Louis.

Antimony.—Hallett's Antimony for import has been sold as low as 8.75c., but the general asking price for large lots is 9c. Cookson's is more or less nominal, at 9.25c. to 10c., while other brands range between 7.50c. and 8.50c.

Nickel.—The price of Nickel is unchanged, at 45c. for large lots and 50c. to 60c. for smaller quantities.

Old Metals.—The demand continues to fall off and business is now exceedingly dull. Notwithstanding this there is not quite the uncertainty in the Copper market that was apparent last week, and it is possible to quote dealers' buying prices within a closer range, as follows:

	Cents.
Copper, Heavy Cut and Crucible	13.00 to 13.25
Copper, Heavy and Wire	12.50 to 12.75
Copper, Light and Bottoms	11.50 to 11.75
Brass, Heavy	10.00 to 10.25
Brass, Light	7.75 to 8.00
Heavy Machine Composition	12.25 to 12.50
Clean Brass Turnings	8.50 to 8.75
Composition Turnings	10.50 to 11.00
Lead, Heavy	4.00
Lead, Tea	3.75
Zinc Scrap	3.75

Iron and Industrial Stocks.

NEW YORK, December 4, 1907.

Stock market conditions have shown a decided improvement. Liquidation is less in evidence and money is somewhat easier, so that the pressure on values has diminished, and consequently stock values have for the first time in several weeks shown a decided upward tendency. The market on Monday and Tuesday morning was almost buoyant, but reacted Tuesday afternoon. The range of prices from the date of last week's report up to Tuesday of this week was as follows on active iron and steel stocks: United States Steel common 23¾ to 27⅛, preferred 82¼ to 88⅛; Car & Foundry common 26 to 29¼, preferred 82¼ to 87½; Locomotive common 36½ to 37¾, preferred 86½; Steel Foundries common 5 to 5¼, preferred 26 to 28; Colorado Fuel 16 to 19½; Pressed Steel common 16⅝ to 18⅞, preferred 64 to 69½; Railway Spring common 24 to 26½; Republic common 14½ to 17¾, preferred 61 to 65; Sloss-Sheffield common 32½ to 37; Cast Iron Pipe common 18¼ to 21, preferred 50 to 57; Can common 3½ to 3¾, preferred 40. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 26½, preferred 87⅝; Car & Foundry common 28⅝, preferred 87½; Locomotive common 36½, preferred 86½; Colorado Fuel 18⅜; Pressed Steel common 18¼, preferred 69; Railway Spring common 26; Republic common 17, preferred 65; Sloss-Sheffield common 37; Tennessee Coal 100¼; Cast Iron Pipe common 23; Can common 3⅝, preferred 39¾c.

Dividends.—The Republic Iron & Steel Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable December 23.

The Boston Belting Company has declared the regular quarterly dividend of 2 per cent., payable January 2.

The International Silver Company has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable January 2.

The American Brake Shoe & Foundry Company has declared a quarterly dividend of 1¾ per cent. on the preferred and 1 per cent. on the common stock, payable December 21.

The Pittsburgh Foundrymen's Association.—The regular monthly meeting was held on the evening of December 2, in the auditorium of the Carnegie Technical Schools, Schenley Park, Pittsburgh. The meeting was addressed by Mr. Stanwood of the Houston, Stanwood & Gamble Company of Cincinnati on "New Methods of Industrial Education." The E. H. Mumford Company of Philadelphia showed moving pictures of molding machines as devised by Bonvillain & Ronceray, showing the operation of these machines. Prof. C. B. Conley of the Carnegie Technical Schools gave a short talk, explaining the new course of the schools for foundry foremen. The meeting was extremely interesting and was quite well attended.

The Industrial Power Company, Milwaukee, Wis., formerly a copartnership, has been incorporated with a capital stock of $120,000, and will engage in the manufacture of gas engines and gas producers. The organizers of the company are Cyril J. Atkinson and Henry K. Cowen. Mr. Atkinson was formerly chief experimental designer with Crossley Brothers, Ltd., England, and later a consulting engineer.

Canadian Bounty Distribution, for 1906-7.

In the early winter of 1906-1907, when the Canadian tariff was revised, a change was made in the fiscal year to accord with the new plan under which the Parliamentary session at Ottawa begins in November, instead of January or February, as was the rule until 1905. The fiscal year now ends in March, and in consequence of this change the reports of bounty payments for 1906-1907, just made to Parliament, cover only the nine months which ended on March 31.

Bounty payments for iron and steel production began in 1883, but in the present report the figures are not carried further back than 1895. In that year they amounted to $63,000, paid exclusively in respect of pig iron, for there were then no open hearth furnaces or Bessemer converters in Canada. For the nine months ending March 31 last the bounties on pig iron were $385,231; on puddled bars, $312; on steel ingots, $575,259, and on manufactures of steel, chiefly wire rods made at Sydney and Montreal, $338,998. The total payments under these four headings for the nine months under review were $1,299,801, and for the 13 years—1895-1907—the total was $9,567,413.

The payments to the 10 iron and steel making companies on the bounty list in 1906-1907 were as follows:

Company.	Pig Iron.	Steel Ingots.	Manufactures of steel.	Totals.
Algoma Steel Company, Ltd	$104,655.94	$243,636.54	.....	$348,292.48
Dominion Iron & Steel Company, Ltd	135,631.23	234,844.28	298,567.05	669,042.56
Nova Scotia Steel & Coal Company, Ltd	29,006.54	46,557.84	18,146.51	93,710.89
Hamilton Steel & Iron Company, Ltd	29,006.54	50,220.47	21,404.22	125,668.25
Canada Iron Furnace Company	28,793.35	.....	.....	28,793.35
John McDougall & Co	2,062.58	.....	.....	2,062.58
Deseronto Iron Company	2,598.75	.....	.....	2,598.75
Londonderry Iron & Mining Company	28,505.75	.....	.....	28,505.75
Montreal Rolling Mills	.....	.....	881.19	881.19
Electric Reduction Company	235.20	.....	.....	235.20
Grand totals	$385,231.28	$575,259.13	$338,998.97	$1,229,801.04

Included in the payment of $125,678 to the Hamilton Steel & Iron Company was a sum of $311.66 on puddled iron bars. This was the only plant at which iron bars, on which bounties are paid, were made in 1906-1907, although in the middle nineties there were payments from the Dominion Treasury on these products totaling as high as $20,550, and by the fiscal legislation of 1906-1907 the bounties on puddled iron bars were continued. For 1907 and 1908 the rate is $1.65 a ton. In 1909 it will be reduced to $1.05, and in 1910, when the present act expires, the bounty rate will be down to 60 cents.

During the year covered by the foregoing figures the payments were made under an act passed in 1899, an act which was to expire in June, 1907. The bounties under this legislation were on a diminishing scale, and during 1906 were at the rate of $1.05 a ton for pig iron from native ore, 70 cents for pig iron from imported ore and $1.05 for steel ingots and puddled iron bars. The scale was increased by the legislation of last year to $2.10 for pig iron from native ore, $1.10 for pig iron from American and Newfoundland ores and $1.65 a ton for steel ingots and puddled iron bars.

Under this new scale there will be a large increase in the payments for the year 1907-1908. Moreover, in the current fiscal year the new furnace at Port Arthur, which uses native ore, will come on the bounty list for the first time; so will the second furnace of the Hamilton Company. The drafts on the Dominion Treasury will be still further increased in consequence of the starting of the new rolling mill at Welland, Ontario, and by the additions which have been made to the furnace capacity—Bessemer and open hearth—at Sydney and Sault Ste. Marie.

The statistics which have been presented to Parliament further show that in the 12 months ending March, 1907, Canada imported from the United States metals and manufactures of metals, on which duty was paid, of the value of $42,560,000, as compared with $11,541,000, the value of similar imports from Great Britain. On related manufactures on which no duty was paid the imports from the United States were of the value of $15,598,000, as compared with $4,184,000 from Great Britain.

E. P.

PERSONAL

Joseph H. Wallace of Joseph H. Wallace & Co., industrial engineers, Temple Court, New York, is in England, his firm having construction work under way for the large wall paper factories at Greenhithe, near London.

F. F. Prentiss, president of the Cleveland Twist Drill Company, Cleveland, Ohio, has been elected vice-president of the Ohio State Board of Commerce.

R. W. Martindale, who holds the position of Pacific Coast manager of the United States Cast Iron Pipe & Foundry Company, with offices in the Monadnock Building, San Francisco, is spending a month in visiting the principal plants of the company.

Samuel A. Kennedy, president of the Rogers-Brown Ore Company, Chicago, has been appointed by the Governor of Illinois as a delegate from that State to the Rivers and Harbors convention to be held this week in Washington, D. C.

Frank K. Highberger, formerly assistant to W. P. Siebert, in charge of rail and billet sales of the Carnegie Steel Company, Pittsburgh, has resigned to accept the position of manager of sales of the New York State Steel Company, Buffalo, N. Y.

John C. McMynn has resigned his connection with Robert W. Hunt & Co., engineers, Chicago, taking effect December 1.

George A. Gallinger has been appointed manager of the Pittsburgh office of the Independent Pneumatic Tool Company, at 1210 Farmers' Bank Building, Pittsburgh. He formerly traveled for the Chicago office of the company.

Powers Wick has been appointed superintendent of the Lower Mills of the Carnegie Steel Company, Youngstown, Ohio, to succeed T. R. Smith, deceased.

The firm of Fogarty & Dickinson, Sucr., San Luis Potosi, Mexico, whose entire stock of machinery and supplies was recently destroyed by fire, has been reorganized under the name of Compañia Importadora De Maquinaria, S. A. It is stated that the new company has a capital stock of $325,000 fully paid up, and will occupy a ground floor space of over 26,000 sq. ft. Walter Fogarty is president and manager; F. A. Dickinson, vice-president and manager; I. M. Martinez, secretary and treasurer; A. Kramer, second vice-president and assistant manager; Pedro del Hoyo, auditor.

The total capitalization of new companies incorporated with $1,000,000 capital and upward in Maine, New Jersey, New York, Delaware and Massachusetts in November was $42,000,000, compared with $52,050,000 in the preceding month and $184,900,000 in November, 1906. The November incorporations show the lowest total with one exception of any month in 15 years.

The receivers of the Southern Steel Company, Birmingham, Ala., which went into bankruptcy some time ago, have decided to close down all the furnaces, finishing plants and mines of the company. A meeting of the creditors has been called for December 13, and pending this conference the business of the company will be suspended.

The Mechanical Engineers' Meeting.

The largest attendance in the history of the American Society of Mechanical Engineers is expected at the twenty-eighth annual meeting which opened in New York Tuesday evening, December 3, inasmuch as this is the first general meeting to be held in the new headquarters in the United Engineering Building at 29 West Thirty-ninth street. The convention was formally opened at a quarter before eight with the reading of the annual presidential address. For his subject, Prof. F. R. Hutton chose one on which he is peculiarly well qualified to speak from his long connection with the society in the capacity of secretary, preceding his term of office as president, namely,

"The Mechanical Engineer and the Function of the Engineering Society."

It was, moreover, an especially appropriate topic for the first annual meeting in the new building.

The forepart of the paper was given to differentiating the mechanical from other engineers, both in accordance with accepted standards and as judged by the membership of the society. Quoting Tredgold's definition of civil engineering, as given in 1827, "the art of directing the great sources of power in nature for the use and convenience of man, as the means of production and of traffic in States, both for external and internal trade as applied in the construction of roads and bridges, aqueducts, canals, river navigation and docks for internal intercourse and exchange, and in the construction and adaptation of machinery and in the drainage of cities and towns," the author remarked the fitness of the definition to engineering in general to-day (considering that the term civil then merely distinguished the civilian from the military engineer), and this, in spite of the fact that the numerous special branches of engineering, recognized now, were then unknown. The author suggested as an even more comprehensive definition suitable to the present understanding of the term, "The engineer is he who by science and art so adapts and applies the physical properties of matter and so controls and directs the forces which act through them as to serve the use and convenience of man, and to advance his economic and material welfare." He then proceeded to classify and show the relation between those in the various branches of the profession, as the mining, electrical, naval, military, chemical, sanitary, heating and ventilating, refrigerating, hydraulic, gas and transportation engineers, and further pointed out the distinction between the civil and the mechanical engineer, enlarging upon the scope and function of the latter. There followed an interesting classification of the members of the society which summed in tabular form is given herewith:

Group name.	Numbers.		Percentage.	
The unclassified	306		10.3	
The army and navy	11		0.4	
and marine	18		0.6	
The hydraulic	12		0.4	
Patents	25		0.8	
Journalists	30		1.0	
Mining and metallurgy	31		1.0	
Engineering contractor	48		1.6	
Testing and inspecting	49		1.6	
Operating engineer	55		1.8	
Locomotive and railroad	57		1.9	
Electrical engineer	65		2.2	
Professor and teacher	185		6.3	
Draftsman and designer	115		4.0	
Local manager	153	1,572	5.2	53.6
Shop executive	338		11.8	
The manufacturer	966		32.6	
Office practitioner	493		16.5	
Totals	2,957		100.0	

Turning to the second phase of his topic, the president took up the service of the society to its members, giving eight directions in which it is a benefit—by its existence, by offering the right of association, by furnishing the advantages of a body corporate in the profession, by its meetings, by the significance of membership in it, by creating and maintaining a library, by its publications and by the personnel and organization of its official staff. Each of these factors in its service was explained and discussed at some length, and in return the duties of the members to the society.

Relative to the possible function of the society to those not enrolled within it, the speaker advocated a mean between the aristocratic idea that the society exists exclusively for the advantage of its members, and the communistic idea that all engaged in engineering, regardless of achievement or training, are eligible to its benefits. In a limited sense the engineering associations of Great Britain and Germany are examples of these two extremes. After considering the difficulties on the one hand and the desirabilities on the other of a plan to extend the usefulness of the society, the author proposed a concrete scheme whereby the society could bring about and promote the growth of other organizations, societies or clubs, specialized either by location or line of activity, giving them the advantage of affiliation with the American Society of Mechanical Engineers. In offering this as the fundamental purpose of his paper, the president elaborated on the details of the proposition and presented arguments for it, both from the standpoint of the parent body and the subsidiaries.

At the conclusion of his address the president announced the gift of a group of models from Captain Ericsson's executor to the society. These have been for some time in the Metropolitan Museum of Art in New York City, but have been offered as more appropriate to the museum in the United Engineering Building.

The report of the tellers, next given, declared the election of the following officers for the ensuing year: President, M. L. Holman, St. Louis; vice-presidents, Prof. L. P. Breckenridge, University of Illinois; F. J. Miller and Arthur West, Pittsburgh; managers, W. L. Abbott, Chicago; Alex. C. Humphreys, Stevens Institute, and H. G. Stott, New York, and treasurer, Wm. H. Wiley, New York. The president-elect was escorted to the platform by John Fritz and John E. Sweet, two honorary members, and was introduced to the society by the retiring president. The usual social reunion with a collation and informal reception followed.

As the discussions of the papers presented Wednesday were not available at the time of going to press, the report of the deliberations on that day will be deferred until the printing of the complete report in the next issue.

The registration at the last count, taken Tuesday night, was about 420 members and over 300 guests.

Oregon has 300,000,000,000 ft. of standing timber, more than any other State in the Union, and one-sixth of the entire supply of the United States. At $12 per 1000 ft., the State's timber is now worth $3,600,000,000. The most productive area lies west of the Cascades, where the average of standing timber is 17,700 ft. to the acre, but many tracts are found that yield 50,000 ft. Single logs, that in the form of sawed lumber are worth from $50 to $100, are commonplace. Six hundred sawmills, employing 15,000 men, besides 7000 men in the logging camps, produce 2,000,000,000 ft. of lumber every year, for which the world's markets pay Oregon nearly $45,000,000 for forest products of all classes. Federal withdrawal of extensive forest reserves and the State's new laws for the protection of its forests are depended upon to prolong indefinitely the existence of Oregon's timber supply as its principal source of revenue.

The Velte Foundry & Machine Company, Pittsburgh, Pa., is placing on the market an improved type of Siemens gas and air valve, made in sizes from 18 to 48 in., inclusive. The improvements consist of special steel plates to prevent cracking and spreading, while the valves are made heavier than the ordinary line, and there is also a special thickness of metal put at the lower base to withstand the heat and increase the wearing qualities of the valve. These improvements have met with the approval of leading engineers and furnace builders.

The Rhode Island branch of the National Metal Trades Association held a meeting on November 26 to which members of the Boston branch were invited. Every metal working concern in Providence except one was represented. The Rhode Island branch is one of the largest in the National Association.

Hardened Steels.

Percy Longmuir presented a paper before the recent meeting of the Iron and Steel Institute on the above subject. Besides being a well read and splendidly trained theoretical man, the author of that paper is constantly in touch with practice; indeed, in his deliverance here considered the practical viewpoint of the matter strongly predominates.

In his introduction he remarks that the literature of hardening bears very little relation to the practice. Especially is this the case in dealing with the heat treatment of the high speed tool steels, and with few exceptions comparatively little information of value has been given on the hardening or tempering of ordinary carbon steels. These statements emphasize the difficulties of the interpretation of microscopical results, and also the fact that many scientific workers are unfamiliar with the practical aspects of work.

Hardening Practice.

When dealing with carbon steels the suitability of the quenched steel is a function of the carbon present. This is so fully recognized in practice that special care is always exercised to obtain the exact percentage of carbon which experience has shown to be desirable. The usual range is from 0.5 to 1.5 per cent.

Other conditions leading to success and calling for notice are as follows:

1.—The majority of the articles for subsequent hardening are worked into shape from rod, string or strip. This, in its turn, has undergone a considerable amount of work in reduction from the ingot. Only in exceptional cases are cast materials submitted to hardening.

2.—While the heating temperatures may reach 1000 degrees C. (1832 degrees F.), the quenching temperatures never attain this point. The usual practice is to quench at as low a heat as is consistent with the properties desired in the tool.

3.—Quenching baths, when of plain water, are usually slightly warmed, but never fall below atmospheric temperature.

4.—After water hardening, the majority of tools are tempered.

In well organized works the processes of hardening and tempering are operated by specially trained workers, who achieve results of remarkable regularity. The hardening operations are remarkably effective, and notwithstanding large outputs, very free from waste.

Structures of Commercial Steels.

A large number of tools, giving a range of from 0.5 to 2 per cent. carbon, which had been hardened in the ordinary commercial way and proved by actual trial to be efficient for their respective purposes, were examined.

The microscopical structures were, carbon for carbon, and temper for temper, practically identical, irrespective of the source of the tool. With a carbon content about 0.9 per cent. the structure consisted of hardenite; with a carbon content lower than this, of hardenite and ferrite; and when the carbon was higher, of hardenite and cementite.

The particular arrangement of structures varied according to the extent of the tempering. Not a single structure in the whole series could be described as showing a sharply defined pattern, and no other constituents than those mentioned have been met with.

A second series of steels, either purposely or accidently spoiled in hardening, was procured and examined microscopically. The resulting structures were very erratic, and an infinite number of patterns was noted, giving in many fields characteristic martensitic, austenitic or troostitic appearances. The majority of the steels were flint hard, but were useless either for cutting or resisting abrasion.

From a comparison of the results obtained from the two series, it may be stated that the characteristic feature of a correctly hardened steel is an absence of definite or pronounced structure, whereas the leading trait of a spoiled steel is the presence of a definitely sharp structure.

The foregoing studies, representing works conditions, were supplemented by

A Series of Laboratory Experiments.

The object of these experiments was to examine the influence of varying quenching temperature on the structure of a series of steels of varying carbon content. A summary of the work may be given by the results obtained from one of the steels and from a pure white iron containing 3.4 per cent. carbon.

The steel selected was made by the crucible process and contained 1.15 per cent. carbon, 0.09 silicon, 0.19 manganese, 0.02 each of sulphur and phosphorus and no aluminum. To secure effective quenching, small sections ½ x ½ x ⅜ in. thick were used. They were imbedded in bone ash in a gas fired muffle, were uniformly heated to 1000 degrees C. (1832 degrees F.), one of the pieces quenched, and the temperature of the muffle then slowly lowered until other desired quenching temperatures were reached. The quenched pieces were afterward ground under a free flow of water and wet polished, special care being taken to remove the surface layer, thereby reaching the true structure. With the paper, microphotographs are given of the sections etched with 1 per cent. nitric acid in alcohol, in each case the resulting films being removed from the etched surface.

In the small piece quenched from 1000 degrees C. (1832 degrees F.), there is a great range of variable structures. Judged from a hardness test alone this section was satisfactory, but the variety of pattern obtained in the structures shows the hardening to be useless.

The sample quenched from 800 degrees C. (1472 degrees F.), gave a wholly uniform structure. Practically, the structure would indicate good cutting and wearing properties in a tool such as a drill. The section quenched from 730 degrees C. (1347 degrees F.), resulted in a structure free from variations, and of the same type, but less distinct than the preceding one.

The piece quenched from 700 degrees C. (1292 degrees F.) is just within the range of a hardened product, but is unsatisfactory from a hardening point of view, owing to the variation in structure. Even at a low power magnification no one field can be truly said to represent the structure. Judged practically, the variation found here would result in the tool wearing soft in places. If in the form of a twist drill the edges would turn up.

The fact that certain quenching temperatures produce uniform structures has also been confirmed in steel with less than and with about 0.9 per cent. carbon.

A section of the same size of very pure white cast iron was taken. It contained carbon 3.4 per cent., graphite none, silicon 0.03 per cent., manganese 0.03, sulphur and phosphorus each 0.01, and no aluminum. This material when heated to 1000 degrees C. (1832 degrees F.) and quenched gave a remarkable variety of pattern in its structure. It shows that a high carbon product when hardened in its cast state always gives hardenite interspersed by cementite and massive cementite.

Conclusions.

The author's conclusions are that the constituents of commercially hardened steels are ferrite, hardenite and cementite. The ideal structure (or lack of structure) is only produced in a certain range of quenching temperature, which varies according to the composition of the steel and the shape of the piece. Temperatures outside of this range result in more or less crystalline patterns, which in the smallest of sections vary from one microscopic field to another. Although these patterns may sometimes give the appearance of special constituents, they are in reality the product of an abnormal quenching temperature. Steels containing them, though hard, are useless for cutting or resisting abrasion.

Experience shows that the fullest properties of a steel are only reached on material that has had a considerable amount of mechanical work put upon it, and has then had any mechanical stresses removed by annealing.

G. B. W.

The Machinery Trade.

NEW YORK, December 4, 1907.

Business with machinery houses in this section the past week was rather light and, contrary to the expectations of a few weeks ago, did not show a particularly marked improvement, in spite of the fact that the financial situation, which is believed to have caused the decline in business, has considerably improved. It was thought in some quarters that trade would begin to pick up as soon as money became easier, and the inquiries that were received two weeks ago tended to accentuate this belief, but since our last report the volume of inquiries has not been very encouraging. Some fair sized orders were placed, however, and while these purchases are more in the nature of completion of improvements started some time ago, rather than the starting of any considerable buying movement, they indicate a confidence in the return of a more active demand. At this time of the year purchases that can be held over until next year are not made, and companies that intend to make improvements generally prefer to withhold announcements of their plans for a few months, so that the dearth of reported plans of expansion is not indicative of a continuance of the present light demand. General conditions appear to be sound and stocks are not large.

Manufacturers of steel castings who are seeking orders in the Manhattan territory are picking up some business in the way of small lot orders, but they find that their usual customers are indisposed to make contracts extending over any great length of time. Customers who during the past few years made a practice of making contracts extending over several months are now confining their orders to their immediate needs and are asking for early deliveries. It is expected that this cautious buying will continue until the trade learns more about what the future demand for machinery will be.

In the absence of domestic orders manufacturers have been more actively seeking foreign business, with excellent results, especially from the Orient and South America. A large amount of business is being placed by Japanese export houses in this city, and some manufacturers have received sufficient orders to offset to a considerable degree the scarcity of domestic business. This trade appears to be assuming larger proportions and more prominence among machinery men as its magnitude becomes known. Much is heard in the street of the value of such business in keeping plants in operation, it being said that a good sized plant is running almost wholly on export orders.

It is said in the trade that some of the extensive inquiries now in the market for the Japanese exporting houses are for material for the Manchurian Railroad being constructed by the Japanese Government. It will be remembered that it was announced some time ago that about $10,000,000 was to be spent on equipment for this line, and Japanese engineers have visited this country and Europe during the past few months with a view to looking into the question of machinery purchases. The fact that some orders are being placed and that large inquiries are in the trade here is taken as an encouraging sign by dealers, who feel confident that a large part of the business will come to this country.

The Delaware, Lackawanna & Western Railroad has placed the order for the five cranes for its Scranton shops, which have been mentioned in these columns, with Manning, Maxwell & Moore, New York. The order includes a 10-ton crane for outdoor service, one 15-ton and three 5-ton cranes for use in the foundry now in course of construction. From all accounts the company has not yet issued its list of machine tool requirements for the Scranton shops.

The Erie Railroad has been doing some purchasing of late for its coal mining properties in the vicinity of Scranton, Pa. A number of mining plants are being overhauled, and orders recently given by the company include a 350-hp. engine and a 550-hp. engine, which are to be furnished by the Ridgway Dynamo & Engine Company, through McClave, Rimmer & Co., 90 West street, who are the company's New York agents.

McLaughlin Bros., engineers and contractors, Baltimore, Md., have received a contract to erect a new plant for the Maryland Glass Corporation, for which considerable in the way of power plant equipment will be required. The main building will be two stories, 70 x 134 ft., and the power house 30 x 80 ft. The firm is at present purchasing material for constructing the buildings, and will shortly take up the question of power equipment. The horsepower required has not yet been ascertained, but the machinery will be electrically driven, and a considerable number of motors will be required.

The De Laval Separator Company, New York, which has been buying considerable new machinery for its plant at Poughkeepsie, N. Y., intends to build an addition, 60 x 100 ft., to be used for general manufacturing purposes. Oscar Bernstrom is general manager.

Charles M. Schwab denies that any additions are contemplated for the Union Works of San Francisco, as has been announced in the daily papers. It had been stated that the companys' shipbuilding plant was to be modernized at a cost of $1,000,000. Mr. Schwab states that there are no plans under way for any additions to it.

The Ballbach Smelting & Refining Company, Newark, N. J., has inquiries in the trade for a Corliss engine of about 70 hp. The company is preparing to erect a power house at its Newark Bay plant, which is to be 50 x 85 ft.

At a recent meeting of the State Canal Board at Albany, N. Y., plans were approved for contract No. 20, sections 2 and 3 of the Barge Canal. The work includes the dredging of the Mohawk River from Rexford flats to Mineville, involving an expenditure of $4,000,000.

Catalogues Wanted.—The Roteng Engineering Corporation, 20 Vesey street, New York, desires catalogues from manufacturers of and dealers in stone working machinery.

The Western Glass Company, Streator, Ill., is anxious to receive catalogues and literature relating to coal dust firing, with especial reference to its use in annealing ovens heated up to about 1200 degrees F.

On November 18 the plant and equipment, stock of mining supplies, valves and fittings and catalogue files of the Gardiner, Worthen & Goss Company, Tucson, Ariz., were destroyed by fire. The company desires catalogues and prices of general mining supplies and machinery.

Chicago Machinery Market.

CHICAGO, ILL., December 3, 1907.

Gradually yielding to the restorative influences of returning confidence and the successful expansion of exchange mediums by the introduction of clearing house checks and other means, the local financial situation is this week distinctly easier. There is manifestly less disposition to hoard currency, and it is evident that greater tranquillity pervades the public mind respecting the outcome of a condition that has been aptly termed an inverted panic. The past week has developed more inquiry for machinery, with a corresponding increase in actual sales. As might be expected, these have come from the smaller interests and include no transactions of notable size. If not significant in volume, the demand is of a character that indicates a firm reliance of the unpretentious rank and file of industrial interests in the recuperative power of the country. It is also apparent from negotiations between seller and buyer respecting contemplated purchases that but for the existing abnormal conditions of credit, trade would even now be much more active. As it is, offers of purchase involving terms of credit ordinarily acceptable to the seller are often rejected. This in the majority of cases results from no question of the buyer's solvency, but a misgiving of his being able to marshal his resources to meet his obligations within reasonable time.

Those lines of machinery which depend largely for patronage upon the railroads and other interrelated corporations are extremely quiet so far as new business is concerned. Many such concerns still have considerable work on unfinished contracts with which they are still engaged and which in the main are going forward to completion. A statement issued by the Allis-Chalmers Company of its machinery shipments for the six months preceding November 1 furnishes a striking instance of the extent of such forward contracts. For this period, from a minimum in June of 23,139,757 lb., shipments of machinery reached a maximum in October of 27,821,682 lb. The total shipments for the six months from May to October, inclusive, amounted to 150,234,639 lb. While the succeeding months of the year will, perforce, fail to sustain this progressive ratio, and may even be expected to show a marked reduction in output, yet the record furnishes a bracing argument against ultra pessimistic views, too commonly entertained by those who are inclined to look wholly upon the dark side of the situation. Machine tool dealers generally agree that last week's business showed a noticeable improvement over the week before, not only in the number of small tools ordered, but in sentiment as well. For the time being the small shop is the mainstay of business, and nothing but the stoppage of currency circulation has so far disturbed these interests.

The Acme Forge & Machine Company, Bloomington, Ill., a copartnership formed by H. Hawkins and J. J. Jones, will do medium forge and machinery work. The forge shop has been completed, but equipment for a machine shop will be required about January 1.

The Waterman Marine Motor Company, Detroit, Mich., has acquired all patterns, tools and stocks of the Kowalsky Engine Company, Verona, Pa., and will manufacture the line of marine and stationary engines formerly made by this company. In addition to these motors, the company will continue to manufacture its Out-board and Porto motor, and also the new motor, model K, especially designed for canoes, light rowboats and stationary work.

Work has been commenced on the erection of five new buildings for the American Casket Mfg. Company, Fort Worth, Texas. The machinery equipment for these buildings will involve the outlay of about $50,000, and will include a dry kiln system for two 22 x 60 ft. kilns, shaving collecting system, woodworking machinery, one 220-volt direct connected generator, 18 motors ranging from 3 to 15 hp., and 8 x 14 ft. elevator, belting, &c.

The Delphos Foundry & Mfg. Company, Delphos, Ohio, recently incorporated with a capital stock of $10,000, is in the market for a hand traveling crane, 27-ft. span. All other equipment is installed.

J. A. Wheeler, Ithaca, Mich., has purchased the machine shop formerly owned and operated by S. L. Miller, and is preparing to enlarge the building and its equipment. The latter will include a drill press, lathe and electric plating machine, for which the new owner will be in the market a little later on.

Bids will be received by T. E. Nichols, City Clerk, Atlantic, Iowa, for one high duty pumping engine capable of lifting water from a depth of 26 ft. against a head of 90 to 160 lb., and to pump 1,500,000 gal. in 24 hr.; also one triplex or power pump, to be driven either by steam engine operating under 80 lb. boiler pressure, or by electric motor, and capable of pumping from a depth of 26 ft. against a head of 90 to 160 lb., at a rate of 1,500,000 gal. in 24 hr. In addition to this equipment 1000 or less water meters, ranging in sizes from ⅝ to 2 in., are wanted, together with casing, valves and fittings for 8 and 10 in. wells.

The City Council of Natchez, Miss., has instructed the Water Commissioners to investigate the advisability of installing an electric light plant in connection with the present water plant. Communications concerning this matter should be addressed to the Water Commissioners.

Plans are being prepared by Smith & Powers, Sulphur Springs, Ark., for a combined electric and water works plant to be built at that place. It is estimated that an expenditure of $25,000 will be required to build and equip the plant. Included in the material and machinery required are a turbine, dynamo and water pipe 6 and 8 in. in diameter. Structural material and a passenger elevator will be needed for the construction of a new hotel also to be erected there.

Philadelphia Machinery Market.

PHILADELPHIA, PA., December 3, 1907.

Trade continues dull. There is, however, a more hopeful feeling. The financial situation shows further improvement, and while it will probably take some little time to restore entire confidence, it is believed that conditions generally are shaping themselves for some betterment. The recent money scare has upset many plans for plant improvements, and there have been a number of cancellations of orders and a large volume of prospective business has been held in abeyance. There is little doubt expressed, however, that a good share of this business will come out just as soon as matters settle down, although it is by no means anticipated that there will be any rush during the early winter months. Curtailment policies are being adopted in almost every direction, and while there has been no complete shutdown of manufacturing plants in this territory, a large number are working on reduced hours. Sales have been confined to single tool propositions, mostly of a light and special character, while very little has been done in the regular line of machine tools. Several dealers and manufacturers have some fair business in sight, which they expect to close early the coming month. Collections show but little improvement, although the scarcity of ready funds is not quite as pronounced as it was a few weeks ago.

Manufacturers, even with reduced operating forces, are catching up with orders in hand pretty rapidly, and if plants are to be kept in operation uninterruptedly, it will be necessary for new orders to come out in greater volume than is the case at the present time. While some builders of tools are making up stock, the number is not likely to be large, as not only the high cost of manufacturers is to be considered, but also the matter of tying up ready funds in finished tools, which is now a very important factor.

Export business is quiet. Practically nothing has come out in the regular machine tool lines, although there have been some orders taken for special tools and machinery. Manufacturers of power transmission specialties who have an established trade abroad report some falling off in their usual orders, which, however, is not unexpected, at the close of the year.

Boilers and engines are not in active demand. Many propositions covering both large and small equipment are being held in abeyance, and it is difficult to get business moving under exsting general conditions.

Second-hand machinery and tools have improved in demand, but not to a great extent. Some buyers who have been compelled to make purchases of equipment have turned to the second-hand machinery field for their needs, where they can frequntly find something to supply their wants at lower figures than they would have to pay for new tools.

Steel casting plants and jobbing foundries are booking but few orders. Practically all of the plants are running on reduced tonnage, and it is next to impossible to get buyers to place orders for the future or contract for any heavy tonnage.

Ballenger & Perrot, architects and engineers, have awarded a contract to D. H. Sharp, Camden, N. J., for a 15 x 49 ft., one-story boiler house addition to the Highland Worsted Mills, in that city.

The Harlan & Hollingsworth Company, Wilmington, Del., will erect three large car shops. Plans call for reinforced concrete construction, in which will be installed modern machinery.

The Glenn Hosiery Company, Wilmington, Del., will erect a manufacturing plant. The factory building will be 50 x 135 ft., two stories, built of brick.

The Superintendent of the United States Mint, in this city, has advertised for bids, which will be opened December 7, for 500,000 lb. of highest grade electrolytic copper, in ingots weighing from 10 to 12 lb. each; also 100,000 lb. of screened shot nickel, both subject to mint test and assay. Deliveries are to be made to suit requirements, and specifications may be had on application to John H. Landis, superintendent.

Proposals will be received until Monday, December 9, by the secretary of the Property Committee of the Philadelphia Board of Education, for repairing filters in the various public schools; also for equipment of various kinds for use during the year 1908, including, among other items, tanks, grate bars, packing, gaskets, belting and belt lacing, steam boiler and pipe covering and miscellaneous equipment. Specifications and details can be obtained from the Superintendent of Buildings, room 742, City Hall.

Considerable new equipment, as well as additions to the plant, is being planned for the League Island Navy Yard the coming year. Congress will be asked for an appropriation of nearly $1,000,000 for this purpose, which includes among other items $322,000 for an extension to the central power plant; $100,000 to begin work on a saw mill, boat and joiner shop; $50,000 for a central heating plant; $35,000 for electric motors; $30,000 for extension of the locomotive crane service; $18,000 for continuing the railroad system. Improvements to parts of present plants, new elevators, &c., are also included in the programme.

The Newton Machine Tool Works, Inc., reports orders for new machinery somewhat light, comprising chiefly special machines, cold saw cutting off machines and milling machines. Work enough is in hand, however, to keep the plant fairly busy well into next year without building stock, while shipments during the month, which comprised keyseat milling machines, slotting machines, cold saw cutting off machines, horizontal and duplex milling machines and special boring machines for street railroad motor work, compare favorably with those of the same period last year.

New England Machinery Market.

WORCESTER, MASS., December 3, 1907.

Indications of increased confidence are to be found among all classes of business men. Tangible evidences are the starting up of a large number of works on increased time or with larger numbers of operatives. Among them is the plant of the E. & T. Fairbanks Company, St. Johnsbury, Vt., which has been running three days a week and has now gone on an 8-hr. schedule, operating the full works. This company reduced its output not because of lack of orders, but because of the general financial condition. In this connection it should not be lost sight of that not a small percentage of New England manufacturers of metal goods made little or no reduction in time or working forces.

The machine tool builders are showing a greater inclination to manufacture for stock. Some inquiries are being received. Collections are improving. Some slight further curtailment of production has occurred in the aggregate, but otherwise the situation among the manufacturers remains unchanged. The dealers are doing some business, but little, if any, gain in volume is indicated. The month of November compares favorably with October in orders booked. Some inquiries are being received which it is expected will soon materialize in orders. After inventory taking is completed a considerable amount of business should enter the market, if the accepted betterment of conditions is realized.

Some of the machinery men believe that the taking of inventory will have an important effect in the process of the restoration of complete confidence. It is argued that many manufacturers, do not realize how profitable a year they are ending, or, when inventory is taken twice a year, how profitable the last half of the year has been. In not a

few cases business houses have been surprised by the unexpectedly large totals of the month's business.

A few scattering instances are reported of refusals to accept cancellations of orders for machine tools. These are in addition to special tools, which few customers would expect to be relieved of. It is something rather new to refuse to accept a cancellation, and those who have become aware of the cases in question are watching the outcome with interest. Machinery men would be very glad to see the custom changed. One suggestion is that some system similar to that of the engine builders be adopted. They require a payment of 25 per cent. of the price when the order is booked, another 25 per cent. when the engine is delivered on the customer's premises, and the balance in 30 or 60 days after the engine is in satisfactory operation. The initiative in the adoption of a system of non-cancellation should be taken by the associations. All the trade would perhaps gladly co-operate if some practicable system of making of an order a non-breakable contract could be agreed upon.

In this connection there is some criticism of the taking of orders for delivery far ahead. The method adopted by the Brown & Sharpe Mfg. Company during the recent tremendous rush for machinery is cited as an excellent one. Instead of booking orders for delivery a year or more ahead, which would have been the case were orders accepted as such, the company told the customer that instead of an order a memorandum would be made of the requirement, which would give him his place when machines were ready, but no date of delivery nor price was named. As the time approached when the customer could have the machines he was notified of the fact, and if he wished to book the order at a certain price he could do so. While the memorandum is as much of an order in a sense as an actual order would be, according to present usage, under which an order may be canceled at the option of the customer, still the matter of price alone is an important item, as many machine tool builders have found to their loss, because several times in the last two years prices have been advanced with books loaded with orders at a lower figure. Had orders been accepted subject to the price prevailing when work on the machines ordered was begun large additional profits would have been secured.

There is little significance in the fact that few announcements of proposed new construction are being made at this time, for this is always the season with manufacturers in New England when few additions or new works are started. Work on buildings which were planned or started before the depression set in is being carried along according to schedule, as a rule; few instances are recorded where new construction is being held up because of a fear that the additional room will not be required. The first impulse in some cases may have been to hold off until the situation defined itself more clearly, but with returning confidence this feeling disappeared and building operations continued. Occasionally there is news that new building plans are being formulated in the face of existing influences, but where this is the case the interested parties are not making public announcement of their intentions. If the confidently expected resumption of demand arrives early in the year, the spring should see quite a material amount of new manufacturing building.

The success of the new issue of New York, New Haven & Hartford Railroad bonds is considered to be a foregone conclusion, which is of importance to the machinery trade and other lines of manufacturing because the $39,000,000 of new money will be devoted largely to increasing equipment and facilities generally, and it is believed that new repair shops will be included. As has been stated in this column, the company is not well provided with repair shops at the western end of its system, and the plan is to build large works, probably in or near New Haven. The great shops at Readville, Mass., now take care of repairs on both locomotives and cars for the eastern end of the system, and it may be that both classes of work will be provided for in the new plans. But the more imperative necessary is additional locomotive repair shops, made necessary by the greatly increased equipment which has been purchased under the present management. The new bonds are selling at a premium in advance of December 2, the date of stock record under which rights of stockholders are apportioned, each holder of stock being entitled to purchase $100 in bonds for each three shares of stock. The rights are already selling at $2.50 a share and higher, which would appear to make certain that the entire issue will be speedily absorbed, in spite of the stagnant condition of the general bond market.

The Draper Company, Hopedale, Mass., manufacturer of textile machinery, states that it will rebuild immediately its bobbin roughing plant at North Newport, N. H., which was burned November 21, with a loss of $40,000. The boilers and engines were saved, but the remainder of the equipment will have to be replaced.

The Winsted Edge Tool Works, Winsted, Conn., is enlarging its factory by a 60-ft. extension and the carrying up of a 70-ft. section an additional story.

Word comes from Mystic, Conn., that the Industrial & Mfg. Company, New Britain, Conn., is to erect a new factory building in Mystic, to be 50 x 200 ft., and three stories. The purpose is to make this the first of a series of buildings to be occupied for various manufacturing purposes.

In the report of the Bureau of Equipment of the Navy Department it is recommended that several appropriations be made for the Boston Navy Yard, notably for the installation of machines for the manufacture of chain, at a cost of $150,000, which would accomplish mechanically what is now done by hand. The wire rope machinery of the yard is said to be old-fashioned and the bureau desires its replacement by modern equipment for the purpose, to reduce the cost and better the quality.

The period of dullness at the Eastern navy yards begins in a few days, with the departure of the battleship fleet for the Pacific, which will cause the discharge of large numbers of workmen. The New England yards will be hit to a material extent, though the shops will continue running full, as usual, in the manufacture of stock equipment for the ships.

J. W. Carrel, salesman for Hill, Clarke & Co., Inc., Boston, has resigned his position to accept a place with the *American Machinist*. Mr. Carrel covered the State of Connecticut and western Massachusetts for his house, and is widely known in the machine tool trade. He will go abroad for his new employer, sailing in a few days. Mr. Seng, of the Philadelphia office of Hill, Clarke & Co., will take Mr. Carrel's old territory. He is a Connecticut man, being a native of Waterbury.

Cincinnati Machinery Market.

CINCINNATI, OHIO, December 3, 1907.

In the way of new business there is still nothing worth mentioning in the line of machine tools, and production is being restricted correspondingly; but manufacturers who keep posted on the financial developments of the country are very much encouraged over the reports from the money centers of New York and Chicago, and believe the worst is over. It is a matter worthy of special note that the tool builders of this section have accepted the situation philosophically, and the interviewer finds no confirmed pessimist among the number; all feel that with the return flow of money into circulation the mills, foundries and factories of all kinds are bound to resume, and that means new tools and machinery of every description. Currency legislation is expected to be one of the principal topics to engage the attention of Congress, and close observers in the tool manufacturing line are hopeful that measures may be adopted which will insure a scientific and elastic currency system. Local pay rolls are still largely made up of bank scrip, but issues are being gradually retired, and it is expected that the end of this expedient will be seen in a few days.

While some of the larger manufacturers in this field believe that the spring will see a return to normal conditions, others are of the opinion that there will be little positive relief until after the Presidential election, and this latter class is planning shop conduct to correspond.

As stated at the outset, there is very little doing in the way of sales of tools, and this situation holds good as to the second-hand dealer also; but in other lines of manufacturing the slump has not as yet been felt apparently, save to a moderate degree. For instance, at the Cincinnati plant of the Allis-Chalmers Company the month's record shows the last two weeks of November 100 per cent. in excess of the first two weeks, and altogether the feeling is that the month has been ended in good form, everything considered. This company is still running two gangs of men, day and night. Most of the orders now are for small sizes, and in this line there has been no apperciable decrease in output; but considering the larger units, such as would be ordered by important companies, there is very little business. General Manager Bower of the company's Cincinnati interests and first vice-president of the parent company, is due here on Wednesday to look over the local situation.

The Cincinnati Milling Machine Company will probably be the first of the group of companies building new plants at Oakley to get housed in its new location. Arrangements are progressing to occupy the new building of the Modern Foundry Company by the first of the year. This institution will make all the castings required by the company, and the capacity of melt is 50 tons per day. A part of the machine shop will be in operation early in the new year. The plant of the Cincinnati Milling Machine Company will occupy about 15 acres.

One of the newer manufacturing concerns which has prospered during the prevailing money disturbances, according to Manager Chas. E. Berold, is the Automatic Specialty Company, Sixth and Baymiller streets, this city. The company is manufacturing a small punch press for foot power, but which is easily connected up for power on which a number of interesting improvements are claimed. The company is looking for a central location, which will give it larger quarters. It has about 4500 sq. ft. in its present plant.

A meeting of foundrymen was held the past week and a committee of five appointed, whose duties will be to prepare a form of contract upon which to base future deals with the tool men. This will be reported back to the Foundrymen's Association, and if ratified will be presented to the machine tool men. The various changes to be incorporated in this new contract have already been explained in *The Iron Age*.

A communication from Charles T. Colvin, treasurer of the Colvin Foundry Company, Providence, contains information of interest to the machinery and foundry interests of the Ohio Valley. Mr. Colvin was a visitor in Cincinnati recently, and writes that his visit was part of a trip upon which he had previously visited Montreal, Toronto, Detroit, Chicago, Milwaukee and St. Louis. Among other things, Mr. Colvin mentioned that the thing which impressed him most in Cincinnati, and elsewhere as well, was the progress that had been made in establishing the open shop, and spoke of the restrictions of four years ago. He was amazed at the progress that has been made in the Cincinnati District in the building of new and expensive machinery plants.

The closing down of the Zanesville plant of the American Rolling Mill Company is stated by the officials of that company to be but temporary. The Middletown plant is not at all affected, and continues to run on full time and full capacity.

It is reported that a change has been made in the working conditions at the plant of the Ohio Foundry Company, in Dayton, and that it is now an open shop.

The Toledo press denies the reports sent out that manufacturers of that city have shut down or laid off hundreds of employees. High officials of five of the largest were interviewed to show that in but one instance exists an actual shutdown. The Toledo plant of the Republic Iron & Steel Company, a part of November, had only its office force at work, difficulty in getting currency for payrolls being attributed as the chief reason. Fifty men of a payroll of 350 were laid off at the works of the American Can Company. The Milburn Wagon Company, on account of the annual inventory, reduced working hours, but kept its full complement of men at work. The Toledo Castings Company is working a full force, but on five days' time. The Toledo Metal Wheel Company laid off 25 men and reduced working hours from 13 to 9 hr.

Manufacturers of machinery used in railroad shops are interested in the determination of Cincinnati, Bluffton & Chicago Railroad officials to locate their terminals and shops at Huntington, Ind., and the fact that work has already commenced locating the shop quarters. The terminals and shops will be located in what is known as the Bippus tract, which includes 20 acres, lying between Front street and the Stenzel road and west of the Chicago & Erie Railroad.

The new plant of the Warner Gear Company, Muncie, Ind., has been placed in operation. The company owns patents on its products and has had a steady demand during the temporary depression. The general superintendent is Frank H. Jones.

Cleveland Machinery Market.

CLEVELAND, OHIO, December 3, 1907.

Machine tool dealers report no improvement in business. The financial situation continues to grow brighter slowly and collections are a little better. Although banks have not resumed payments in currency or lifed the sixty day rule from savings deposits the difficulty in securing currency is not so great as it was during the past month and a few plants are able to meet their payrolls in currency. Bank checks, however, continue to be the principal circulating medium.

Machinery and other manufacturing plants that adopted the policy of retrenchment by largely reducing their forces when the financial situation became acute have not yet started more extensive operations, and a large proportion of the local industrial plants are running on about one-half of their full capacity. In few, if any plants have further reductions in their working force taken place during the week, and in some cases a few workmen have been taken back.

The general feeling regarding future conditions is quite satisfactory. While it is not expected that business activity will recover rapidly or that a great deal of improvement will be noticed this month, it is believed that there will be a fair amount of business at the beginning of the year. Machine tool dealers share in this opinion, and are not looking for a fair volume of orders before January. During the week local dealers billed out some tools, orders for which had not been cancelled, but new orders, even for single tools, were very scarce. There were some sales of second-hand tools to companies that needed tools right away and went into the market for bargains. There are no further inquiries for tools for new shop equipment, and a number of prospective purchasers who made inquiries before the financial disturbance are still waiting until the country settles down to its normal condition. Engineering concerns have some work on hand finishing old contracts, but as yet are receiving no inquiries regarding industrial plant construction work for the coming year. Tool dealers handling mill supplies report that they are getting about as many orders for supplies as ever, but these orders are considerably smaller than they were.

The National Malleable Castings Company has commenced the erection of an addition to its power plant at its Toledo plant. The general contract for the building and equipment has been awarded to F. C. Work, electrical engineer, New England Building, Cleveland, who will receive bids for the equipment in about six weeks. The equipment will include a 650-kw. generator, a cross compound engine of 1000-hp. or over, motors, switchboard, &c.

One company that is not feeling the effect of the present business depression is the Akron Mfg. Company, Akron, Ohio, which manufactures its products for the Burt Mfg. Company, also of Akron. The sheet metal department of the former company is working night and day turning out ventilators, exhaust heads, oil filters, &c., in an effort to catch up on back orders.

The Duplex Hanger Company, maker of joist hangers, has purchased the property formerly occupied by the Royal Motor Company on Marquette street, and will use the building for its offices and warehouse, having moved its office quarters from the Williamson Building. The building is 90 x 185 ft., and two stories high.

The Reeves Engineering Company, Mt. Vernon, Ohio, which was incorporated a few days ago with a capital stock of $100,000, is a reincorporation of the Reeves Gas Engine Company, Columbus, Ohio. The plant of the old company will be removed to Mt. Vernon, where a new factory will be built.

The Valley Power Company, Akron, Ohio, which has acquired water rights on the Muskingum River, 9 miles south of Zanesville, Ohio, has been incorporated with a capital stock of $50,000. The incorporators are John W. Limbert of Akron, Harry A. Williams of Cuyahoga Falls, James G. Stewart and Frank T. Martin of Kent and Irving H. Vail of Chicago. Bids will be received soon for the equipment for a 5000-hp. electric plant.

The Akron Brass & Bronze Foundry Company, Akron, Ohio, has been incorporated with a capital stock of $10,000 by Jacob Adler, Henry M. Ehman, Max Holub, N. O. Mather and C. R. Grant.

The American Architects' Tube Company, Columbus, Ohio, has outgrown its present quarters and has leased a six-story building on Spring street in that city, which it will soon occupy. The company manufactures tubes for the shipping and storage of blue prints. The company recently increased its capital stock to $50,000. Since the increase in capitalization a reorganization has taken place, the present officers being: Daniel C. Beard, president and general manager; H. C. Griffith, first vice-president; E. B. Watson, second vice-president; M. Wellington Crane, secretary and treasurer.

The Criterion Motor Company has been organized at Kent, Ohio, for the manufacture of automobiles. Local capital is being interested in the enterprise, and it is expected that the erection of a plant will be started soon.

C. M. Walsh, who is planning the erection of an electric light, heat and power plant in Cuyahoga Falls, Ohio, has been granted a franchise by the council of that village for the operation of his proposed plant.

Government Purchases.

WASHINGTON, D. C., December 3, 1907.

The Isthmian Canal Commission will soon ask for bids for a vertical boring and turning mill, double friction drum hoisting engine, single friction drum hoisting engine with boiler, 75-hp. single noncondensing engine, 50-kw. engine type revolving field generator and other supplies.

The following bids were opened November 26, for supplies for the navy yards:

Bidder 11, Alberger Condenser Company, New York; 14, Berry & Aikens, Philadelphia, Pa.; 23, Brooklyn Forge & Supply Company, Brooklyn, N. Y.; 24, Blake & Knowles Steam Pump Company, New York; 28, E. W. Bliss Company, Brooklyn, N. Y.; 42, Columbus Pneumatic Tool Company, Columbus, Ohio; 43, Cincinnati Electric Tool Company, Cincinnati, Ohio; 46, Cleveland Pneumatic Tool Company, Cleveland, Ohio; 60, Drew Machinery Agency, Manchester, N. H.; 66, Dayton Pneumatic Tool Company, Dayton, Ohio; 76, Fortuna Machine Company, New York; 77, Frevert Machinery Company, New York; 79, Fairbanks Company, Baltimore, Md.; 108, Hisey-Wolf Machine Company, Cincinnati, Ohio; 113, Helwig Mfg. Company, St. Paul, Minn.; 118, Independent Pneumatic Tool Company, Chicago, Ill.; 119, Ingersoll-Rand Company, New York; 134, J. B. Kendall, Washington, D. C.; 145, Motley, Green & Co., New York; 147, Manning, Maxwell & Moore, New York; 169, National Electric Supply Company, Washington, D. C.; 175, George Oldham & Sons Company, Frankford, Pa.; 182,

Pittsburgh Pneumatic Company, Canton, Ohio; 190, Philadelphia Pneumatic Tool Company, New York; 192, J. B. Roache, Brooklyn, N. Y.; 206, Rider-Erickson Engine Company, Philadelphia, Pa.; 245, United States Electric Tool Company, Cincinnati, Ohio; 249, Vandorn Electric & Mfg. Company, Cleveland, Ohio; 250, D. A. Vanhorn & Co., New York; 264, Central Metal & Supply Company, Baltimore, Md.; 274, Dayton Hydraulic Machinery Company, Boston, Mass.; 287, Watson, Stillman Company, New York.

Class 163. Two centrifugal pumps—Bidder 60, $529; 145, $440.79; 169, $434; 264, $340; 274, $485; 287, $465.

Class 171. Seventy-five pneumatic scaling hammers—Bidder 28, $2418.75; 46, $2384.40; 66, $2022.20; 118, $2159; 119, $2087.61; 175, $2390.50; 182, $1973.75; 190, $1382.

Class 172. Thirty pneumatic calking hammers—Bidder 28, $1125; 42, $695; 46, $961.90; 66, $959.55; 118, $922.20; 119, $905.95; 175, $1072.50; 182, $963.82; 190, $651.90.

Class 173. Ninety-five medium clipping and calking pneumatic hammers—Bidder 28, $3410.50; 42, $2490; 46, $3035.10; 66, $3017.40; 118, $2911; 119, $2748.56; 175, $3331.25; 182, $3054.17; 190, 1986.30.

Class 174. Three pneumatic hammers for heavy chipping and calking—Bidder 28, $125.25; 42, $100; 46, $101.20; 66, $95.58; 118, $96.55; 119, $112.59; 175, $118.10; 182, $98.68; 190, $65.90.

Class 175. Twenty pneumatic hammers for riveting, ¾ in.—Bidder 42, $925; 46, $890; 66, $844.60; 118, $813.50; 119, $943.15; 175, $1136.75; 182, $892.37; 190, $616.60.

Class 176. Forty pneumatic hammers for riveting, ⅞ in.—Bidder 42, $1850; 46, $1777; 66, $1690.88; 118, $1627.75; 119, $1821.79; 175, $2313.50; 182, $1784.75; 190, $1233.20.

Class 177. Fifteen pneumatic hammers for riveting, 1⅛ in.—Bidder 42, $662.50; 46, $688.55; 66, $641.28; 113, $859.50; 118, $614.25; 119, $689.01; 175, $901.75; 182, $681.24; 190, $469.10.

Class 178. Twenty-five nonreversible pneumtaic drilling machines—Bidder 42, $1400; 46, $1369.40; 118, $1211.94; 119, $1,163.62; 190, $965.85.

Class 179. Forty nonreversible pneumatic drilling machines, ⅞ in.—Bidder 46, $2437.85; 118, $2116.30; 119, $3105.73; 190, $1706.

Class 180. Thirty pneumatic drilling and reaming machines, 1¼ in.—Bidder 42, $3050; 46, $2413.50; 118, 1694.10; 119, $2304.44; 182, $2578.45; 190, $1442.80 and $1403.26.

Class 181. Ten pneumatic drilling and reaming machines—Bidder 42, $1200; 46, $891.75; 118, $618.40; 119, $1018.33; 182, $855.91; 190, $545 and $523.38.

Class 182. Twenty nonreversible drilling machines, 3 in.—Bidder 46, $2336.40; 118, $1576.90; 119, $2011.91; 190, $1292.

Class 183. Ten pneumatic boring machines, 1 in.—Bidder 46, $546.20; 118, $586.60; 119, $474.21; 190, $449.70.

Class 184. Twenty pneumatic boring machines, 2 in—Bidder 46, $1203.90; 118, $1185; 119, $1662.40; 190, $899.40 and $842.

Class 185. Ten pneumatic boring machines, 4 in—Bidder 46, $863; 118, $594.50; 119, $965.19; 190, $503.10 and $476.70.

Class 186. Twenty pneumatic breast drills—Bidder 118, $946.90; 119, $924.68; 190, $522.70.

Class 187. Ten pneumatic drilling machines, 1 in.—Bidder 42, $1950; 113, $891; 118, $1012.80; 190, $792.90.

Class 188. Twelve pneumatic drilling machines, 2 in.—Bidder 42, $2500; 113, $1240.80; 118, $1212.80; 190, $1004.10.

Class 189. Twelve pneumatic drilling machines, 3 in—Bidder 42, $2500; 118, $1212.80; 190, $1004.10.

Class 190. Four flue rolling and tapping machines—Bidder 46, $346.50; 118, $256.30; 119, $383.54; 190, $199.20.

Class 191. Twenty pneumatic holderson—Bidder 46, $410.60; 118, $381.40; 119, $648.92; 190, $300.

Class 192. Two jamb riveters—Bidder 119, $235.75; 190, $162.40.

Class 193. Three jamb riveters—Bidder 119, $335.75; 190, $237.40.

Class 194. Twenty electric breast drills—Bidder 43, $951.40; 76, $1800; 108, $960; 147, $1100; 190, $781.80; 245, $790; 250, $1055.50.

Class 195. Twenty electric drilling machines, ½ in.—Bidder 43, $1178; 76, $1800; 108, $1050 and $1199.40; 147, $1300; 190, $882.40; 245, $930 and $1050; 249, $1266.50.

Class 196. Twenty electric drilling machines, ¾ in.—Bidder 43, $1404.80; 76, $2310; 108, $1441.60 and $1538; 147, $1680; 190, $1424.70; 245, $1257.40; 249, $2401.

Class 197. Five electric drilling machines, 1¼ in.—Bidder 43, $478; 76, $768.75; 108, $458.15 and $998.40; 147, $530; 190, $408.30; 245, $372.40; 249, $660.

Class 198. Five electric drilling machines—Bidder 76, $983.90; 108, $1259.25; 147, $1140; 190, $510; 249, $660.

Class 238. Eight hydraulic jacks—Bidder 23, $252.48; 134, $256; 147, $266.72; 192, $349.44 and $377.56.

Class 240. One pumping engine and one pump—Bidder 14, $844.50; 60, $616.50; 206, $391.50; 264, $650.

Class 241. One feed water heater—Bidder 11, $215; 24, $571; 79, $319; 147, $269.50; 264, $300.

The following bids were received at the Bureau of Yards and Docks, Navy Department, November 23, for the construction, including machinery, of a power plant at the naval hospital, New Fort Lyon, Col.:

Lewis & Kitchen, Chicago, item 1, $90,727.76; 2, $2150; 3, $2150.

Evans, Almiral & Co., New York, item 1, $91,472 and $98,750; 2, deduct $2285; 3, add $2285; 4, 85,582, $88,940, $90,935; $96,840 and $2400.

Sterns-Roger Mfg. Company, Denver, Col., item 4, $99,800.

Dixon Engineering & Construction Company, Toledo, Ohio, item 3, $2850.

D'Olier Engineering Company, Philadelphia, item 1, $77,800; 2, $2090; 4, $77,300, $77,000 and $77,500.

Joseph L. Sweigard, Philadelphia, Pa., item 4, $5058.

C. L. De Muralt, New York, item 1, $72,000; 2, $2600; 3, $2600; 4, $62,250.

The General Electric Company, Schenectady, N. Y., has been awarded contract for motors, air compressors and other apparatus for the San Francisco Post Office, at $4875.

Under bids open November 8, circular No. 397, for supplies for the Isthmian Canal Commission, Henry R. Worthington, New York, has been awarded class 1, four boiler feed pumps, $204.76.

The following awards have been made for supplies for the navy yards, bids for which were opened Novemebr 5;

Manning, Maxwell & Moore, New York, class 141, one instantaneous change engine lathe, $1800.

Bullard Machine Tool Company, Bridgeport, Conn., class 146, one boring and turning mill, $1969.50.

Under opening of November 19, for machinery for the navy yards, the following awards have been made:

Detrick & Harvey Machine Company, Baltimore, Md., class 54 ,one motor driven drilling, boring and milling machine, $3295.

Hendey Machine Company, Torrington, Conn., class 63, one engine lathe, $842.

The South Atlantic Car & Mfg. Company.

The South Atlantic Car & Mfg. Company, Waycross, Ga., whose plant was recently destroyed by fire, suffered a loss that bore heavily upon its resources and seriously imperiled its chances of resumption. Negotiations are, however, under way for the acquisition of additional capital that will be needed to rebuild the plant and liquidate the company's indebtedness. A Committee of Management, consisting of two representatives each from the Board of Directors of the Car Company and the creditor banks and material men, was appointed with full power and authority in management of the company until its debts are paid. At a meeting of this committee it was agreed that all interests would be best served if the company were permitted to reconstruct its plant and resume operations; and this course was accordingly recommended. Steps are therefore being taken to increase the capital stock from $250,000 to $320,000, and in addition thereto issue to $300,000 first mortgage 6 per cent. 20-year bonds. New capital to the extent of $190,000 is pledged in subscriptions by the Atlantic Coast Line Railroad Company to $50,000, and by the city of Waycross, Ga., to $70,000 of the proposed bond issue; and in addition the citizens of Waycross have signified a willingness to subscribe to $70,000 of increase in the capital stock of the company. Suitable provision was made for securing and taking care of the claims of all creditors. Should the plans of the committee be agreed to by all creditors, the total of whose claims amounts to $608,000, it will result in the rebuilding of a plant that is of great industrial importance to Southern railroad and manufacturing interests.

One of the largest railroad signal and interlocking switching plants in the world was put into operation December 1 by the Delaware, Lackawanna & Western Railroad. The new plant, which is on the electro-pneumatic system, controls all of the train movements at the new Hoboken terminal, and is the first plant of the track circuit interlocking type to be installed in this country. There are 131 little levers that electrically control the switches on every track that runs into the terminal. The old way of switching required at least 30 men to do the work. Under the new arrangement four men can do the work in less time, and so perfectly constructed is the plant that, according to the engineers, it is almost impossible to make a mistake.

HARDWARE

DEVELOPMENTS in the campaign for the authorization of a domestic parcels post have recently followed each other thick and fast. On behalf of this project, the Postmaster-General in his annual report just rendered urges the innovation upon the favorable attention of Congress, and the President in his message to the Congress, indorses the scheme, laying especial emphasis upon the establishment of the system on the rural routes. On the other hand, the campaign has received a decided setback from two high Congressional sources. Speaker Cannon, in an informal letter to the Postmaster-General, has intimated that it is exceedingly doubtful that Congress at the coming session can be induced to add anything to the present facilities for sending merchandise through the mails, giving the united opposition of retail merchants in all parts of the country as the basis for this opinion. Chairman Overstreet of the House Post Office Committee in a speech before the Commercial Club of Indianapolis a few nights ago came out against a domestic parcels post, declaring that the position he had taken in former Congresses had not been changed by anything brought to his attention in connection with the movement set on foot by the Postmaster-General.

While retail interests will be greatly cheered in their fight by the timely utterances of Messrs. Cannon and Overstreet, their value and significance should not be overestimated. It should be remembered that the position of both these influential legislators on this important subject is due largely to the crusade carried on by the retailers during the past three or four years, and that if the pressure is relaxed at this important crisis neither Mr. Cannon nor Mr. Overstreet can be blamed for assuming that the retail merchants have lost interest in the matter. The advocates of these projects can be relied upon to make every effort to put them through, and the legislative history of the past four years shows that the House leaders have frequently been obliged to change front on questions of equal gravity as the result of manifestations of public sentiment.

The outlook, however, for the defeat of the parcels post projects at the present session of Congress is on the whole decidedly encouraging. Representative commercial organizations in many lines of trade are putting themselves on record as opposed to the plan, and the merchants of the country, wholesale and retail, are outspoken and active in their endeavors to secure its defeat. Influential public men recognize and express the grave objections which hold against the scheme and the difficulties that lie in the way of carrying it out. There promises, too, to be an extraordinary pressure of business upon the time of Congress, and some matters of unquestioned gravity will command the attention of our legislators. The probability, therefore, seems to be that parcels post, already regarded by many influential interests as an unwise measure, will fail of passage. This, however, is no reason for relaxing efforts for its defeat, and we bespeak a continuance of the activity of the State associations and of individual merchants which has done so much to make evident the unwisdom and mischief of the merchandise post project.

Condition of Trade.

If the anticipations which are coming to be quite generally entertained that early in the new year there will set in a quickened demand for Hardware products are realized, it is not unlikely that in a good many lines it will be found that there is on the market an insufficient quantity of goods. This condition might naturally result from the fact on the one side that the stocks in the hands of merchants are lighter than usual, while on the other hand production is being very considerably restricted. Under the influence of this conservatism, which now so generally characterizes the conduct of business by manufacturers, jobbers and retailers, there is necessarily much curtailment in the volume of trade, as both merchants and manufacturers are deferring purchases, awaiting further progress in the settlement of the monetary disturbance and a possible decline in the price of raw material and finished products. The near approach of the holidays and the end of the year, with its inventory and the balancing of books, is also an important influence with merchants, causing them to get along with present stocks rather than replenish them at this time. A marked feature of the situation is the disposition on the part of the large interests, not only to work in harmony, but also to restrict production so as to keep the market free from the menace of accumulated stocks. In this respect the present depression is quite different from others which have preceded it, and it is to be hoped that the spirit of co-operation and a regard for the steadiness of the market as a whole will prevent the demoralization of prices, especially for raw material and the cruder products which might otherwise result. Certainly there has been thus far a remarkable maintenance of prices, reductions being few and for the most part unimportant. In addition to these unquestionably favorable features of the situation, it is to be remembered that there is behind the financial and commercial disturbance, which may in one sense be termed superficial, the well-being of the country at large, and especially of the farmers, who are so generally in splendid condition financially. For a time, pressure on our factories will apparently be diminished; there will be a deferring of many large enterprises; railroads and other great corporations which have been the object of suspicion and attack in many quarters will be obliged to pursue a policy of retrenchment; the extension of manufacturing plants will be interrupted and existing facilities be found ample; the settling up of indebtedness will be attended to before many new obligations are incurred; and the commercial classes as well as the people generally will check extravagance and practice again wholesome care and economy in expenditure. All this, while going on, may entail some inconvenience, but it may be hoped that the lesson will be quickly learned and that the country, wiser and stronger, may soon be permitted to resume normal commercial activity and enjoy an enlarged prosperity.

Chicago.

Although booking comparatively little forward business just now, the Hardware manufacturing interests are keeping in close touch with developments through their traveling representatives. For the time being these agents are devoting a large share of attention to gathering information relating to actual conditions and future prospects of trade. It is noteworthy that, after having

visited jobbers and manufacturers through the Middle West, these observers are speaking more hopefully of the outlook than was the case a few weeks ago. They are impressed with the fact that throughout this great territory there has been no material shrinkage of real wealth, and are convinced that the immense revenues from crops when finally realized will not be hoarded, but will be liberally expended for needed commodities. The proceeds will not, as in 1893, for instance, be swallowed up by outstanding debts. Then surplus resources were absorbed by maturing loans on mortgages in the hands of outside holders, and the purchasing power of such communities was reduced to a minimum that was scarcely sufficient to provide the bare necessities. Now, with the crop producers practically out of debt, it is but reasonable to expect that when money is available it will be spent with accustomed liberality. Another feature that augurs well for the stability of prices, or at least an orderly recession, is that buyers are not clamoring for an immediate and indiscriminate slaughter of values; but are on the contrary anxious for conservative action in this respect. A representative of an Eastern manufacturer of Iron and Steel products reports that out of 22 Hardware jobbers, retailers and manufacturers recently visited, all but two or three expressed satisfaction with the conservative attitude thus far displayed by producers in refraining from a demoralized scramble for orders. A fair volume of trade for the supply of current needs is coming in, but the placing of forward orders for spring delivery awaits the freer circulation of currency. The advent of closing winter weather is shortening outside building operations, which in turn is lessening the demand for Wire Nails and Builders' Hardware. Locally, however, retail business has experienced but little restriction, and no dissatisfaction is expressed at the sales totals for the month by leading dealers. Slightly lower prices rule in some lines, especially in those affected by the decline in Copper, but as a rule values hold remarkably steady. Whatever may be said of the situation, it is certain that a better feeling of confidence exists, and buyers are beginning to realize that stocks will be needed to supply a demand which must of necessity develop.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—The panic month of November has passed and we still have clearing house checks. It is to be noticed, however, that any one who needs currency has no great difficulty obtaining it. The banks seem to be feeling more comfortable, and stocks on Wall Street at this writing are looking up a point or two.

The savings banks and trust companies took advantage of the 30 days' time on deposits under $100. The time is up, and withdrawals in this city are only trifling. In 30 days more the 60-day notice on deposits of more than $100 will also fall due, but the banks do not fear any heavy withdrawals.

Conditions in this city are very much improved. The first big tidal wave of the panic moved from Wall Street westward. We believe that confidence is gradually being restored.

The men who passed through the panic of 1893, after it was over, said to themselves: "We have now had experience. We will understand the laws governing panics the next time they come." Here comes the panic of 1907, but all the conditions are different. Of how little value was the experience gained in former panics? Conditions this time have been very different in the various parts of the country.

The merchants of the city of St. Louis enjoy a very large trade from the South. Most goods in the Southern States are sold with a fall dating, payments for fall purchases maturing in the months of October and November, when cotton, the great Southern staple, moves to market.

This year the planters would not sell when they could. They were holding for higher prices. Then came the panic, and there was no money to buy. As a result a heavy burden has fallen on St. Louis merchants in carrying their Southern customers. Millions of dollars that were sent South by St. Louis banks before the panic, which under normal conditions would have been returned promptly, this year did not come back.

For this reason there has been an unusual strain upon the banks and merchants of this city. But all have put their shoulders to the wheel, have stood together, and now we are glad to report that conditions in the South are easing up, money is returning, and we trust by the end of December conditions will again be normal.

Fortunately for the merchants of St. Louis, they sell goods in all parts of the country. They are not entirely dependent upon any one section for their prosperity. It is interesting to note that in some of the States in the Central West, in the North and in the far West, many merchants have continued to discount their bills, thus indicating in the most substantial manner that the panic has not seriously affected them.

While we have not particularly urged our salesmen to take orders for spring lines, we are receiving a large number of orders with liberal specifications for Wire Cloth, Poultry Netting, Screen Doors, Freezers and other spring goods. It is evident many merchants are pursuing the even tenor of their way, buying goods for their future needs just as they have in past years.

The unexpected usually happens. This panic started in a manner none could predict. It came with the suddenness of a flash of lightning. Some of the "wise ones" predict continued hard times, but history shows the "wise ones" are not always correct. Men have been known to get rich "coppering" inside tips from the wise ones in Wall Street.

Many a man who has earned his money, like the cobbler, by sticking to his last, has felt highly complimented when he found himself in the company of financiers and was let in on the "ground floor." Many such a man has afterward awakened to the fact that there was some miscalculation on the part of these financiers, that while he did not get all his money back, he did have it fully explained to him in detail just "how it happened," and he was convinced they were still "wise ones" even if this one time circumstances were beyond their control.

A little merchant from a little town this morning remarked to the writer that this time the lack of confidence did not seem to be on the part of the people. He said it was curious the lack of confidence the banks showed in each other. They do not even like to handle each other's checks. How can the banks accuse the people of hoarding money? Do the banks expect a retail dealer to deposit his cash collections every day when he cannot get them back with a crowbar?

Now the Secretary of the Treasury steps forward and offers millions at 3 per cent. Then it turns out there is something wrong with the plan. The bankers take the issue. The common people do not get it. Didn't anybody think in the first place that probably somebody would draw money out of the bank and buy some of the issue? When that idea came by slow freight to the minds of some of the bankers then the offer seems to have been pulled back with a big string.

To sum up the matter it is dawning upon the slow mind of the common, ordinary man that some of our leading financial lights are pretty badly "rattled" and do not seem to understand the situation any better than he does.

The people are getting a little tired of having things "explained." There are some plain, simple things they would like to understand. For instance, if the rate of interest the banks charge goes up so high why does not the rate on deposits also go up high? If money is "fashionable" and the banks can afford to charge so much for it, why cannot they afford to pay a little more?

An ordinary man may happen to have some of his children's money on deposit in a bank at a certain rate of interest. This rate has been the same for five years. This same man may be a borrower from this same bank. His rate of interest has advanced, he must pay more, but he has not seen any notice to the effect that the bank is paying a higher rate on deposits.

The people have been educated by history to be hero worshippers. We must have a hero in some shape or form. All of us have looked up to our bankers. We

have looked upon their utterances as being oracular. We also supposed when the Secretary of the Treasury decided to help out the country such a man could not make a mistake—when he took a hand in the game that settled it.

Are some of our idols crumbling? Are we, the common people, learning that some of those in high places really do not know any more than we do? We are asked to have confidence; and do we have confidence, and a whole large lot of it, when some of our fountains of wisdom do not show the slightest confidence in themselves or in each other?

In the opinion of a common, ordinary man the best way for the banks to show confidence is by calling in their clearing house checks and letting out their currency. We believe if they do nothing "awful" is going to happen. We ourselves have confidence in the people. They have shown and are still showing their confidence. They have been courageous and patient. We would like to see a little more confidence on the part of the bankers.

Our salesmen tell us that in some of the towns in their territories the banks are paying out currency as if nothing had happened. In these towns business is good and everything is normal. In other towns, however, they state the banks are holding on to currency; they are doling it out in driblets. In these towns our salesmen report business is dead.

But be all these things as they may, and financially probably we are just as badly muddled as the rest, the cheering fact remains that orders are not only more numerous, but are larger. The trade are buying Christmas goods. The Cutlery department is working at night. Mail orders from the trade have never been affected by the panic at all. And what is still more consoling is the fact that collections are also coming, even from Texas.

We trust we may enjoy our Thanksgiving turkey for Christmas.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—November 19 and 20, about the time of our last letter to *The Iron Age*, the Atlantic Deeper Waterways Commission was holding a conference in Philadelphia, which was attended by several hundred delegates appointed by the States interested. Several Governors were present, a number of United States Senators, and delegates from the various States along the Atlantic Ocean, as well as interior sections, from Boston, Mass., via Rhode Island to New York City, thence via New Jersey to Philadelphia, extending down the Delaware and reaching Norfolk, Va., then extending to North and South Carolina, Georgia and to Key West, Fla.

Quite a number of delegates had from careful examination and investigation wonderfully well prepared articles which were read at the regular half-hour allotments during the mornings and afternoons of the conference. It was stated the advantages could only be secured for the 30,000,000 inhabitants over the extended territory by securing financial assistance from the United States Government. Many of those present said that there had scarcely ever been held in the United States a conference where so large a number of intelligent papers and addresses were presented, reference being made to the importance and advantages of the Inland Atlantic Deeper Waterways both to trade and commerce, as well as in time of war. The only way to accomplish the result was through the assistance of long time Government bonds, and Federal ownership was recommended. On the last evening a banquet was extended to the delegates to the conference, which over 400 persons attended, and numerous intelligent addresses were made by those who had carefully investigated the subject.

It is a well-known fact that the railroads of the section referred to have been unable for the past few years to meet the requirements of trade and commerce, and the natural increase in trade from year to year will, of course, make the conditions more difficult unless deeper waterways can be arranged. Great applause was extended at the banquet to the presiding officer, Hon. J. Hampton Moore of Philadelphia, now the president of the organization, who is regarded as entitled to the credit of having the matter of the Atlantic deeper waterways taken up for the benefit of practically the country at large.

Nearly all the delegates had confidence in a fairly early relief from the temporary financial trouble in existence almost over the entire country. It is certainly somewhat wonderful that the financial excitement should have extended from one side of our country to the other when the entire country was never in a more prosperous financial condition that when this Wall Street mishap came upon New York City's trust companies and extended to the banks in that city. As far back as June last it was feared this trouble might occur owing to the outrageous watering of and margin gambling in stocks by the controlling managers, including the borrowing of money on collateral from one-third to one-half or two-thirds in excess of the real value. Looking back a few months you will find "opportunities" like the following. If you buy a certain named stock at $85 to $110 you will make money. The stock is now quoted down to $50, so that those who were unfortunate enough to purchase have lost half their funds. Another stock was quoted by the organized heads on which a certain number of shares cost $95,000; that same amount of stock is now quoted at $20,000. This has extended far beyond those referred to, and these wonderful losses have caused trouble in Wall Street. Beyond that it is stated in the newspapers that some $500,000,000 was on deposit in New York City in trust companies and banks from depositors all over the country, and that is why the fear and excitement has extended and compelled many of the banks throughout the country to try and hold up their customers' deposits until it could be corrected, one difficulty being the stringency caused by the hoarding of the circulating money of the country.

Now the country at large is prosperous, and never more so than it has been this year. In an extract from printed copies of the recent annual report of the Secretary of Agriculture we learn that the farm products of the country have far exceeded in quantity any previous year, and the combined present value is $7,412,000,000, being some $2,600,000 above 1899, $1,495,000 above 1903, $1,103,000 above 1905, and nearly $660,000,000 above the extreme high value of 1906.

As far back as last June it was feared the value of the corn crop would be reduced very materially, whereas the increase on corn has been wonderful. The value of corn alone is said to be $1,350,000,000, or over 25 per cent. above the average for the last five years. It is estimated that the yield would fill over 2,553,000,000 bushel baskets. It is stated that hay alone will add $660,000,000 to the wealth of the country. Then comes the cotton crop, which is far in excess. The number of bushels of wheat for 1907 is a small amount less than in 1906, but the value of it brings the amount up higher than the income of last year. The oat crop is large. The value of the dairy products amounts to about $800,000,000. Poultry and eggs are valued at $600,000,000, and so it extends all over. The exports in farm products are some $80,000,000 above the high record of previous years. It is stated by Secretary Wilson that it is plain that the farmers of the United States are in a wonderfully good condition, which assists our national welfare. Then comes the output of gold from our mining districts, and the United States has drawn from abroad nearly $100,000,000 in gold within the last two months.

We admit the State of Pennsylvania does not stand highest in these products, although it is estimated it stands seventh of the various States throughout the country in the estimated value of its products. It is not generally understood that the State of Pennsylvania contains about one-twelfth of our population of 85,000,000, but the great advantage of the State is in its manufacturing industries.

Now can you see any reason why there should be any great fears of a continuation of the existing feeling throughout the country? As soon as the various banks of the country can secure a large portion of the money which they have loaned, or which they have deposited in

Wall Street, and as soon as the currency of the country can be increased, which is now being done very rapidly, why should not fears end and confidence be restored?

We feel that as soon as the currency is increased (which it will be), and banks throughout the country cease to be scared and unhappy, all depositors will join in the effort to re-establish their business as well as make their collections from consumers, who as stated above, will be in a very good condition, owing to the wonderful increase in the products of the country.

We think the business of the wholesale houses has not decreased as much as one might have anticipated, owing to the conditions existing temporarily. There appears to be no change in the prices of Hardware and no great fear exists of a decline in prices.

Collections should now improve.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The very needful house cleaning goes vigorously on between the banks and their customers as we approach more nearly a cash basis, accounts are scanned for their value and the collection department is working overtime. The parable of the lost coin seems likely to find its application in present conditions. We are sweeping diligently until we find it in order that we may pay off obligations, whether they be to the manufacturer or the bank. It is more blessed to give even if you don't want to than to have a receiver appointed. The sixpence, too, must be a very nimble one which gets around fast enough in these times to suit the liquidating part of the people. While it is rushing around its orbit like some mad comet, leaving a silvery nebulous streak behind it—to the marketman, to the bank, to the Hardwareman, back to the marketman again relentless as fate—the first of the month seems to come around so very promptly we stand ready to catch it in its flight. At times it disappears from view altogether, and then we put in clearing house substitutes, cashiers' checks or something of that kind to remind us that it is still in existence, with the promise that it is still good and shall be ours when it arrives at its perigee once again.

It is a queer game of hide and seek—that of money and the people. When we want it most it vanishes, and when it is not wanted it comes out in volume and we prate knowingly of the increase per capita and what it betokens for the future.

Things are getting better by degrees, the premium on currency is gradually disappearing, not by reason of those long sermons from various quarters as to the wickedness of hoarding cash at a time like this, but because there is simply no object in so doing. All the orders that are going to be cancelled have been cancalled, we take it, and the balance on the books recast for immediate wants. There will be very small and select stocks in the hands of jobbers by January 1, so if trade does revive, which some are free to predict by reason of superabundant money, there will be some great orders to put on the manufacturers' books.

The arbitary stay laws which have been enacted at certain country points and by individual banks will probably be rubbed off of their private statute books. One bank that we heard from notified us that they would pay no items over $50. Another one allowed its depositors $5 per week and no more. This is a good sort of medicine in one way. It shows how little we can get along on. We turn to our larders and have a grand cleaning up of all the corn meal and bacon there is in the house. Seriously, it will be a great relief when the extravagant rates of interest which have prevailed shall settle down into reasonable figures. What with the contraction of business, heavy collection charges on checks, the high rate of interest which has been asked for renewals, the swollen expense account begotten of prosperity, the profits of the year will be seriously cut into, if the balance be on the right side at all. If we crawl out of our holes with the original talent in the napkin, possibly we shall be doing well. The fortunate man that had the actual coin at his command will have no trouble showing up with the other 10 talents also. The usurer has rarely had a softer snap than the present.

As we say, things are bettering themselves, we are accommodating ourselves to conditions rapidly, and just as soon as New York gives the signal the rest of the country will fall in line despite its recently professed independence.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Since our last report we are glad to be able to say that there has been some improvement in both sales and collections. We took occasion some time ago to predict a large volume of business for the spring trade. We have studied the conditions since that time very closely, and notwithstanding the strong effort of bankers to convince the people that this was a good time to have a panic, we have never changed our minds about the prospects for spring business.

Our Southern country sold the crops of 1905 and 1906 at high prices, with which the farmers were enabled to pay their debts and have fair sized bank balances left. They are now placing on the market the 1907 crop at prices which will bring more money than any previous crop raised in the South.

The enormous amount of money realized for lumber and timber in the past 12 months has added greatly to our exchequer. There are no classes of farmers in the South who work that are not in prosperous condition. Cotton planters are making more net profit on their investment than ever before, and are enjoying greater prosperity than at any time since the Civil War. They have long since realized that it is cheaper to hire a negro than to own him.

The producers of tobacco have sold their crops for the past few years at record breaking prices, and many of them are now seeking investments for their surplus. A great many tobacco raisers who had mortgages on their farms are either lending money or have handsome bank balances. All farm products of every character have been selling at excellent prices. The coal mines, phosphate mines, iron mines furnaces, mills and factories have enjoyed for several years a season of prosperity unequaled in the history of the South.

While our territory is basking in the smiles of this wonderful prosperity, why should we stop the wheels of progress in order to join with the bankers in a financial stampede or panic? Our advice to our friends, the retailers, is to buy conservatively in small quantities, but to keep their stocks well assorted. The people have money, and when they have it they will spend some of it. When they come into your store "be there with the goods" and you will get your share.

Cleveland.

THE W. BINGHAM COMPANY.—Thanksgiving Day, one of the pleasantest holidays in the year, has come and gone. We all should be thankful for the many favors and blessings we have received during the past year. We have had peace and plenty in all our borders, bountiful crops and splendid business.

Now, if we will all look on the bright side, and *allow* ourselves to be hopeful, we believe business will soon resume its normal condition. The government and the leading financiers of our country are doing all they can to mend matters and bring about a better feeling, and confidence in the future seems to be assured.

From reports we get from our country merchants we understand that they are not overstocked, and the outlook for a good, fair trade the balance of this year seems to be very encouraging. The resources of our country are great; our wants are many, and the merchants cannot and will not stop buying entirely, but will buy in a safe, conservative way, keeping their stocks well assorted, which is the right way to do.

A steady and healthy general trade is coming to this market. We are having many inquiries, and some good orders are being placed for some special lines of goods for immediate shipment. Also, we are booking quite a number of orders for shipment after January 1 on some special lines, such as Wire Cloth, Poultry Netting and Galvanized and Refined Sheet Iron, &c.

Considering the present monetary stringency (which is getting better daily), the outlook to us is very hopeful.

New Orleans.

WOODWARD, WIGHT & CO.—The banks here in New Orleans expect to retire a good deal of the asset currency they have been using in the shape of clearing house certificates during the next week or 10 days, and we hope to be on a solid basis, and give every man what we owe him in actual money instead of in a paper promise shortly. In spite of the difficulty in securing currency we have been able to get the crops in pretty good shape, and have persuaded most of the farmers not to haul their cotton back in the store, but let the merchant have it, and let it get in circulation. We have not been, perhaps, as successful as we might have been in this last, but at any rate more successful than we thought we would be in it.

The demand for goods has fallen off very materially in the last two weeks; however, there is always a slight let up before Christmas holidays for standard goods, and it is possible that everything will be starting up briskly after the new year. At any rate, we all look for easier money in January and February, and for better volume of business than we thought there would be three weeks ago. The feeling is distinctly better in all this section than it was at the writing of our last letter, and while none of us look for a repetition of the early part of 1907 or the year of 1906, yet we do look for a good, fair business at fair profits for conservative people.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—November closes with trade conditions in the Missouri Valley region steadily improving. Money hoarded by the banks and the general public is slowly and gradually reappearing and a general resumption of the genuine circulating medium, it is stated by official sources, will not be long delayed. The movement of grain Eastward is increasing and the general outlook is favorable.

The recovery from the sudden and surprising shock sustained by the country will naturally be somewhat slow, notwithstanding the immense resources at command. Business will probably be light during the winter months, but as soon as the spring season opens it is expected that the volume of trade will materially increase.

Portland, Oregon.

FAILING, HAINES & MCCALMAN.—Conditions in our line in Portland continue much more favorable than any one has a right to expect. The writer has had occasion to look into the matter of general business as well as conditions in our own line, and can say with confidence that in all lines of trade catering to the necessities of life, as Hardware, groceries, &c., there has been very little falling off. Such stagnation as we observe in our lines, is nothing more than the usual light buying of the retailer in preparation for his annual inventory on the first of the year, increased very slightly by a desire not to get caught with more stock than is absolutely necessary in case of a drop in prices. This seems to be the only fear of the majority of merchants here, as they are not looking forward to hard times, but to an era of lower prices and a trifle less business.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—Conditions are largely as expected. The weather is favorable for marketing crops, both at country elevators and also for lake shipments. Grain movement is being crowded. Low prices are holding back deliveries, but still the movement is active. Two weeks more of favorable weather would accomplish much. Trade is nearly normal. Collections are fair. The feeling among mercantile houses is good, and plans for the new year are being carefully considered.

Lewis-Shultz Hardware Company has purchased the business of Wilkerson Bros., Hearne, Texas, covering Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Sporting Goods, &c.

NOTES ON PRICES.

Wire Nails.—There is comparatively little doing in a large way in the Wire Nail market, as present conditions do not call for purchases of Nails unless imperatively required for the supply of immediate needs. Some larger buyers who have unexecuted orders on the books of the manufacturers are requesting cancellation or deferring of shipment, owing more to the financial condition than to apprehension that there may be a reduction in price. The policy of the manufacturers in working together in a general endeavor to keep the market steady contributes much to the confidence of the trade in the stability of existing prices. At the same time the fact that the mills are curtailing production for their own protection, as well as with a view to the effect on the market at large has a decidedly steadying and reassuring influence. Quotations on base sizes continue as before as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.05
Carload lots, to retail merchants	2.10

New York.—The early part of the week showed a slight increase of orders, owing probably to the fact that it was the first of the month. Demand is generally moderate, and is expected to continue so until after the first of the year. Local jobbers and Nail houses are holding small lots at store at $2.30, base, and in general this price is fairly well maintained.

Chicago.—The continued tightness of the money market has interfered with trade to a marked extent, and new orders have slackened up until they constitute but a small part of the business coming to the mills. Inability, or more properly the fear of inability, to meet maturing obligations has led to some requests for postponement of deliveries. Still specifications are furnished in sufficient volume to keep the mills busy, and up to the present they have accumulated no stocks. Quotations are as follows: $2.23 in car lots to jobbers, and $2.28 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—The volume of new business being placed in Wire Nails is very light, due to the general unsettled condition of the whole Steel trade, and also to the fact that most large consumers placed liberal orders ahead some time ago before the last advance in prices was made. Specifications against these contracts are coming in only fairly well, a good deal of tonnage being held up owing to the unfavorable condition of the money market and other causes. Shipments of Wire Nails by the mills are lighter than for some time, but an encouraging feature of the situation is that stocks all over the country are reported as being light, and this leads to the belief that when orders commence to come in for spring trade they will be of very liberal volume. In the absence of large business, prices are being well maintained by the mills, but are being shaded by some of the Jobbers who have some Nails in stock at lower prices than are ruling now, and are anxious to move them. This does not affect the general market to any extent. Quotations on base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.05
Carload lots, to retail merchants	2.10

Cut Nails.—The Cut Nail market continues to show irregularity in price, but the mills are making resolute efforts to steady things. At the meeting of the Cut Nail Association held last week it was decided to curtail output to a still greater degree and to maintain prices with as much regularity as possible. A number of mills have of late been diminishing their output considerably, and some have closed down altogether. This policy is to be continued and carried out even more aggressively so as to avoid an accumulation of stocks, and remove the temptation to press Nails upon an unwilling market. We still continue to quote in a general way $2 to $2.10 with freight added, but these figures are frequently shaded.

New York.—Present requirements for Cut Nails are light in this territory. Quotations for small lots at store are $2.30, base, and this price is generally maintained.

Chicago.—Jobbers agree that the past week has been the quietest one of the season. The few orders that came in were seemingly pared down to absolute needs. There has, in fact, been too little demand to induce price cutting, even if there were a disposition to make concessions. As a matter of fact, jobbing prices hold pretty firm, though it is understood that there is more or less irregularity in mill offers when good business is in sight. Chicago quotations are as follows: Iron Cut Nails, carloads, to jobbers, $2.38; to retailers, $2.43; Steel, to jobbers, in carloads, $2.28; to retailers, $2.33.

Pittsburgh.—The market is in a rather unsatisfactory condition, demand being very light, while there is considerable cutting in prices. The mills are not disposed to force business at this time, believing that such a course would be unwise, but at the same time, there are a few sellers that are disposed to shade prices in order to capture what little business there is offering. For this reason our quotations are usually shaded. We quote Steel Cut Nails at $2 to $2.05, f.o.b. Pittsburgh, for carload lots, and small lots at $2.10, to which freight to destination is added. Iron Cut Nails are being held at about $2.15, at mill.

Barb Wire.—Very little new business is being placed, and even specifications against contracts are coming in slowly and somewhat reluctantly. This branch of trade naturally feels the stress of the financial situation, but with the settling of monetary affairs, which seems to be making fairly satisfactory progress, it is expected there will be during the next month or two a marked quickening in the demand. Prices owing to the conservatism of the manufacturers are quite steadily maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Chicago.—About all there is doing is represented by shipments against contract, which are by no means as heavy as they were. New business under ordinary conditions should begin to develop in the Southwest within the next two or three weeks. It may, however, be retarded by the crop tie up and consequent lack of funds. Even if somewhat belated there should be a good demand from this section of the country for spring use. We quote as follows: Jobbers, Chicago, car lots, Painted, $2.38; Galvanized, $2.68; to retailers, car lots, Painted, $2.43; Galvanized, $2.73; retailers, less than car lots, Painted, $2.55; Galvanized, $2.85; Staples, Bright, in car lots, $2.35; Galvanized, $2.65; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Very little new business is being placed and contracts are pretty well cleaned up, so that the amount of tonnage being shipped out by the mills is relatively small. As soon as the financial situation clears it is believed demand for the coming season will open up with a good volume of business. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Smooth Fence Wire.—Large purchasers of Smooth Fence Wire are deferring their orders, or if they have been placed are frequently asking postponement of their execution. The demand from the trade generally is only moderate. Quotations continue as before, f.o.b. Pittsburgh, 60 days, or 2 per cent. for cash in 10 days:

Jobbers, carload lots	$1.90
Retailers, carload lots	1.95

Chicago.—Very little new business is coming in, and specifications are not forthcoming as freely as they should be. It is believed, however, that the limit of postponement requests has been reached and that when the banks begin to recover from their fright there will be a general demand for forwarding shipment. Prices are without change. Quotations are as follows: In car lots, to jobbers, 2.08, f.o.b. Chicago, and to retailers, $2.15.

Pittsburgh.—The amount of new business being placed is very much smaller than for some time, due to the general unfavorable situation and also to the fact that the large trade bought ahead some time ago. Specifications against these contracts are being received by the mills in fairly large volume, but a good deal of business is held up by reason of tight money and inability to make collections on tonnage already delivered. We are advised that in spite of the light buying prices are being well maintained. Quotations for base numbers 6 to 9 are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots	$1.90
Retailers, carload lots	1.95

Copper and Brass Products.—There was a readjustment of some base prices in materials having Copper in their composition, which became effective December 2. The new bases determined on are equivalent in most instances to a decline of 1 cent per pound. Sheet Brass is now 15¼ cents base per pound, Brass Rods 15¾ cents base, Brass Wire 16¼ cents base, and Brazed Brass Tubing 21¾ cents base per pound. Soldering Coppers in quantities of 300 lb. and over were made 21 cents per pound base, at the same time, with the customary advances for the small sizes and quantities under the minimum. The market for Copper and Brass material is still uneventful and only moderate quantities are traded in; nevertheless there is a firmer tone and prices are higher than they were several weeks ago. The opinion prevails in the trade that business, at least for the remainder of the year, will be very conservative in volume, and may even continue so until next spring.

Shot.—Late in the summer, it will be remembered, there was an advance of 5 cents per bag on Shot, following a decline of the same amount made for the purpose of letting in the larger buyers. Since then there has been a heavy decline in Lead, and some apprehension has been felt that Shot would be forced down. Concessions now obtainable by the largest buyers lend color to this view.

Oilers.—The heavy decline in Zinc has apparently not been without effect on Zinc Oilers. While there has been no open reduction in prices it appears that special quotations may be obtained from some manufacturers where orders are promised.

Tacks.—While the market for Tacks has been maintained on a steady basis for an unusually long period, business has fallen off considerably, and stocks at the factories are said to be accumulating. Many producers are running to considerably less than full capacity. Concessions in prices by one or two manufacturers are especially referred to as introducing some unevenness in the market.

Sinks.—Manufacturers of Enameled Sinks have a large amount of business in hand, and deliveries on this line are slow, prices holding correspondingly firm. Concessions are reported, however, on Cast Iron Sinks, in which the volume of business is light.

Rope.—Both the lack of business and the declining prices of Fiber have contributed to lower prices for Rope, which represent a reduction of ¼ to ½ cent per pound, according to seller. Demand is restricted to immediate requirements, which are comparatively light. The following quotations fairly represent the market for base sizes: Pure Manila, 11½ to 12 cents; B quality grades down to 8½ to 9 cents; Pure Sisal, 8 cents; lower grades Sisal, 7 to 7¼ cents; No. 1 Jute, ¼-in. and up, 7½ to 8 cents; No. 2 Jute, 7 to 7½ cents.

Window Glass.—The latest attempt of the hand operating Window Glass manufacturers and the Amalgamated Window Glass Workers' Association to agree upon a sliding wage scale, has resulted in a failure to come to any agreement, and matters are now in exactly the same position as they were before the idea of a sliding scale was advanced. Negotiations have, it is understood, been declared off. Buying for some time has been compara-

tively light and production has been far below normal, so that until buyers' view undergo a change, the present productive capacity of working factories will probably be sufficient to supply requirements. The machine blown factories are in a position to stay in operation during the entire year, if there is a large enough demand for their output, but should domestic Glass become scarce and high the importation of foreign Glass would become profitable. Business in Eastern territory is light, and demand is restricted to actual requirements. It is reported that prices recommended at the last meeting of the Eastern Window Glass Jobbers' Association were as follows: In the States of New York and New Jersey 90 and 15 per cent. discount for single and 90 and 20 per cent. discount for double strength Glass. Similar prices are supposed to prevail in Pennsylvania, but in New England discounts are said to be fixed at 90 and 20 per cent. for single and 90 and 25 per cent. for double strength Glass.

Linseed Oil.—Owing to the quiet condition of this market, the prices of Oil have fallen 2 cents per gallon since our last report. The price of Seed has again reached a lower level, but this does not appear to have affected Oil values. What little demand there is is restricted to small lots. Quotations are as follows: State and Western Raw, in 5 bbl. lots, 43 cents; City Raw, in like quantities, 45 cents, with 1 cent per gallon addition for less than 5 bbl. Boiled Oil is 1 cent advance on Raw Oil. State and Western Raw Oil is held at about 42 cents in carload lots for delivery during the present month.

Spirits Turpentine.—In sympathy with improved conditions in the Southern market, local prices have advanced about 1½ cents per gallon during the week. There is a fair demand for jobbing lots, but large buyers are cautiously holding off, waiting to see if the improvement is to be permanent. The New York market is represented by the following quotations: Oil Barrels, 49 to 49½ cents; Machine Made Barrels, 49½ to 50 cents.

THE large establishment of the Hannah & Lay Mercantile Company, Traverse City, Mich., was recently the scene of a produce show, which attracted wide attention and proved to be a most effective advertisement of the company's business. Through the press every one was invited to bring in fruits, grains, vegetables and all kinds of canned and preserved fruits. The show was also advertised by means of two large box kites supporting a large banner, which floated over the city, more than 1000 ft. high, for a week. The exhibition lasted for three days, and was visited by thousands of people. Nearly every farmer and fruit grower for miles around came to see the more than 1500 fine specimens of the products of their region of the country. During the month, as a result of the show, sales increased 65 per cent. in volume as compared with last year. This company carries on both a wholesale and retail business, and the erection of a large building for the jobbing department is contemplated for next year.

THE WRIGHT-SIMPSON HARDWARE COMPANY, Knoxville, Tenn., has lately been organized, and will occupy quarters at 212 Gay street. The new concern is the outgrowth of the Market Hardware & Harness Company, 25 Market street, although some new interests are included. For a time the Market street store will be continued, but ultimately the entire business will be handled at the new location. The manufacture of a line of Harness will be prosecuted as heretofore.

THE OLD DOMINION IRON & NAIL WORKS COMPANY, Richmond, Va., is sending out an interesting relic in the shape of a miniature horse shoe made from the armor plate of the famous Confederate ram Virginia, commonly known as the Merrimac. It is intended as a reminder of the company's line of Old Dominion Hammer brand Horse and Mule Shoes.

F. H. Rippetoe Company, Hoyt, Kan., has sold its Hardware business to W. H. Cleland.

A NORTH CAROLINA HARDWARE CATALOGUE.

A GREEN covered pamphlet has lately been issued by the Ideal Hardware Company, Goldsboro, N. C., in which attention is called to selections from the many lines carried by the company in stock. It contains 42 pages, and is of vest pocket dimensions. The title of the pamphlet, as it appears on the front cover, is "A Money Saver," and it has evidently been got out for the purpose of having a word with occasional patrons of catalogue and mail order houses and others who may be thinking of sending orders for supplies out of town. Under the heading, "A Word to the Wise is Sufficient," the opening pages contain an address from which we make the following extracts:

> In presenting you this little book it is our purpose to help you and to save you money. We are aware that you are receiving a great many catalogues and circulars daily from firms in the North, and especially Chicago, offering you what seems to you exceedingly low prices, but should you send those people an order you would not get the goods as advertised, and you will run the risk of getting inferior articles than you can buy at home for less money. It is true that they have a few standard articles which they offer you as a bait to get your business, but in the end they will surely get the best of you by putting off on you goods of a second quality.
>
> We have now this proposition to make you: WE WILL SELL YOU THE SAME STANDARD GOODS as advertised by the catalogue house AT THE SAME PRICES, and in many instances cheaper than you can get them from the catalogue house, and you will not have to pay one cent until we deliver you the goods.
>
> You are aware that when you need help your home merchant is always ready to lend you a helping hand, and when you have produce to sell your home merchant will pay you more than you can get by sending your goods to the North, where you have to take just what they will give, and you have no redress at all. We are in the Hardware business to make a living, the same as you toil for your living, and we know you are willing to give us a fair profit, which is all we ask.
>
> We respectfully invite you to visit our mammoth store, and if you wish bring your catalogue, and let us show you how much we can save you.
>
> Come to see us, whether you want anyth'ng in our line or not. We will be glad to see you and show you our goods.

Prices are given on but few of the goods illustrated in the pamphlet, but the public is assured that a visit to the company's large establishment will demonstrate that they are right.

AMONG THE HARDWARE TRADE.

H. W. Grieve has sold his Implement business, at Hordville, Neb., to M. A. Larson.

S. C. Scott, Burlington, Wash., has bought the Hardware, Stove, Implement, Paint and Sporting Goods business of F. W. Weidman.

The Hardware store of W. F. Kleinpell, Elkader, Iowa, was recently damaged by fire. The loss was fully covered by insurance.

G. S. Pain has succeeded to the Hardware, Stove, Implement, Paint and Sporting Goods business of Pain Bros., Hennessey, Okla.

M. O. Atterberry, Oakford, Ill., Hardware merchant, is extending his present quarters by the erection of a 20 x 42 ft. addition.

The Lane Hardware Company, Robert Lee, Texas, has recently increased its capital stock from $5000 to $10,000.

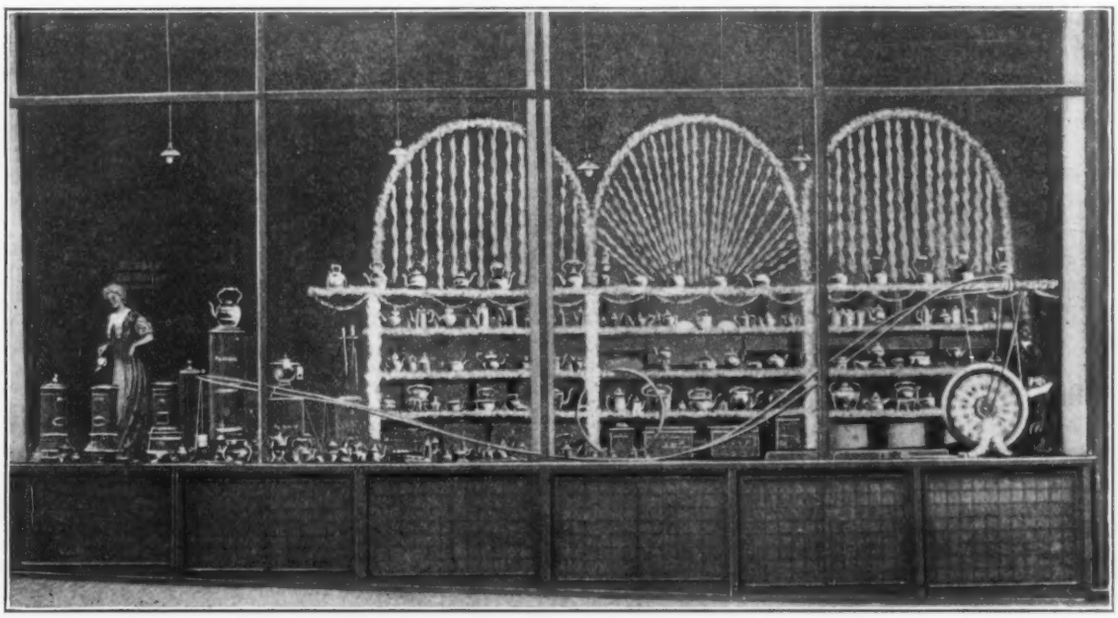
THE MOORE-CARPENTER HARDWARE COMPANY, successor to the Moore Hardware Company, Knoxville, Tenn., formerly located at 210 Gay street, has removed to larger and more commodious premises, at 216 Gay street. The company handles an extensive line of Hardware, Stoves, Tinware, Paints, and Oils, Wagons, Agricultural Implements, etc., at wholesale and retail.

Holiday Trade in The Hardware Store.

Fifth Article.

"LOOP THE LOOP" CHRISTMAS WINDOW.

G. H. READ & BRO., Bloomington, Ill., are one of the increasing number of retail Hardware houses who find it advantageous and profitable to make a special effort to divert holiday business to their store. They carry an extensive line, advertise liberally in the local papers and make good use of their window frontage.



"Loop the Loop" Window Display of G. H. Read & Bro.

A special feature of their window advertising last year was a "Loop the Loop" railroad, which is shown in the reproduction herewith from a photograph of the window, for which we are indebted to the firm. It will be observed that the display of merchandise was a most attractive one, and, helped out as it was by the motion idea, it proved one of the best trade winners ever employed by the firm. It paid for itself many times over, although considering the labor and time involved in preparing the window, the actual cost was no small item. There were always people on the outside as well as inside the store watching Santa Claus making the trip in the car, and a great hit was made with the little folks.

The track of the "Loop the Loop" railroad was Barn Door Track, and was 21 ft. long. The car carrying Santa Claus was made of heavy Sheet Tin by one of the firm's tinners, and was placed on wheels taken from a House Door Hanger. To raise the car to the highest point there was a Chain running in the middle of the track, and on the Chain at intervals of 6 in. heavy tin Rivets were soldered, these being intended to catch on a spring which projected from the bottom of the car. This Chain was attached to a Bicycle Sprocket Wheel, which was kept in motion by an ordinary Fan Motor, to which was connected a small friction Wheel placed against the tire of the sprocket. Of course, after the car got by the highest point the momentum it attained going down the incline provided speed enough to carry it around the loop, which was about 3 ft. in diameter. Then the downward loop momentum forced the car up the shorter incline and down to where the Chain or Cable began, by which it was again returned to the starting point for another circuit of the track.

In the background of the window, as shown in the illustration, were shelves, on which were placed specimens of Nickel Plated, Enameled and Aluminum Ware, Roasters, &c. Among other goods featured were Carving Sets, Chafing Dishes, Skates, Pocket Cutlery and Plated and Sterling Silverware, the latter line being a very extensive one with this house.

SANTA CLAUS WINDOW DISPLAY.

BY F. B. M.

CONSTRUCT a chimney out of Hardware boxes, selecting from stock such articles as are packed in pasteboard boxes about the size of a brick. Separate each box with a layer of Cotton Batting, exposing just enough of the edge of the Cotton to give the appearance of mortar between the bricks or boxes. The label on the box will be exposed to view, thus indicating the quality of material used and from what brickyard you obtained it. Over the top of the chimney place cotton in imitation of snow, tearing the overlapping sides as illustrated herewith. Powder up some Isinglass for snow sparkle and sprinkle on cotton. The Mica makes the cotton glisten and adds realism to the design.

Santa Claus Window Display.

Santa Claus is made out of a false face, coat, &c., the figure being stuffed generously. The short Rung Ladder can be readily made from a couple of strips of soft planed pine, rounding off the corners with a Draw Knife

and boring holes for the rungs. The sawed off ends of a few old Broom handles will answer for the rungs. Fasten to the back of Santa Claus a whole sack full of Hardware articles, especially in the House Furnishing line. In front of and on each side of the chimney should be displayed other selections from the many articles in a Hardwareman's stock which make useful and appropriate Christmas gifts.

"TIMELY TIPS" FOR CHRISTMAS.

THE Orr & Lockett Hardware Company, Chicago, has issued a Christmas catalogue of vest pocket size with nearly 100 pages of illustrations and text. The following title appears on the front cover:

"TIMELY TIPS"
FROM
Orr & Lockett Hdw. Co.
CHICAGO

This title appears below an attractive Christmas design in which a Tool Chest figures prominently as a gift. The catalogue is well printed, and presents an extensive variety of Hardware articles coming under the head of practical gifts.

PREPARATION FOR THE HOLIDAYS.

SUGGESTIONS FROM A PENNSYLVANIA MERCHANT.

EVERY effort should be put forth from now on, until the second week in December, both in planning and preparing for the holiday trade. After the middle of December the results of early efforts will materialize, and the momentum given the business will carry it to the end of the month. In good or bad years there is always more or less holiday trade. If there are conditions present that portend a lean ending for the year, that is an additional reason why more thought should be put forth in planning for this Christmas business.

Start Early.

Lines to Carry.

The first important question to decide is what lines shall be carried. Many regular lines need but a little agumenting to bring them in line for the holidays, such as Cutlery, Nickel and Silver Plated Ware, Aluminum and Enameled Ware, &c. In extending these lines long experience has taught that it is best to avoid those articles made to sell at gift seasons only, such as articles in sets, other than Carvers, Knives and Forks, Spoons, and similar standard goods. In sorting Cutlery after the holiday rush is over unsold sets of Scissors, fancy articles in cases, Butter Knives, Sugar Spoons and the various combinations of these articles are invariably found to be dead stock. Cutlery is good the year round, and a generous leeway can be given this line, especially as to the variety and price. This is the time to display Tools of all kinds. They should be given a prominent place, as they appeal strongly to those who desire to make practical gifts. Sleds and Skates have doubtless been ordered in the summer for fall delivery; also Boys' Wagons, Velocipedes and Tricycles.

Dead Stock.

Toys an Effective Line.

For getting new business and increasing the old there is nothing that can excel a line of Toys judiciously bought. In 10 years' business the two dullest years were the ones Toys were not carried. The amount invested need not exceed $500, and should embrace a good line of Iron and Wooden Toys to sell at 10, 25 and 50 cents. Go slow on items over $1. Dolls and the trashy easily broken articles may be cut out entirely. Many Hardwaremen hesitate about putting in a line of Toys, some thinking it takes away from the dignity of their store: others that they would not know how to select a line. For those who hesitate, on account of the tone of their store, they might consider this question, "Which do I prefer—dignity or dollars?" For those who hesitate thinking they could not select a line properly, it may be suggested that if their experience in buying has enabled them in a reasonable degree to avoid stickers and poor goods in the regular course of their business, their judgment will hardly be far at fault in deciding on the merits of this line.

Dignity or Dollars.

Avoiding Stickers.

The Matter of Displaying Goods.

Before doing anything toward display, take an opportunity, when undisturbed, to calmly size up the appearance of your store. Keep this thought in mind, that the store must be made to look as fresh as possible, and every item be displayed.

Rearrangement of Stock.

You have very likely placed your Cutlery case at the front of the store. If you have a showcase in which you have been displaying Builders' Hardware or other goods clearly out of the gift line, clean it out and fill it with all the Tools you can, marked with the price. You are going to have a busy store, and time given to answering questions about price should be left to the price cards. Put them on everything, and don't be afraid of asking a fair price. Clean up and decorate your stand for Meat Cutters and display fresh ones on it. Have one stand for practical presents. On this gather anything you can think of not usually shown prominently, as a nicely polished Ax or nickeled Lantern. Then go over the stock and see what you have on the shelves in boxes that you can open up and display on this table. Every one is in a good humor at holiday times, so any effort to help things along will not be resented. You can hang up a Buck Saw with a card "For Father." It will cause a laughing comment, and, who knows, you might sell a Saw. If you do not it starts those thinking who like to play a joke at this time, and some other article of your stock, if displayed, may attract their attention and their dollar.

Price Cards Save Time.

Cultivate Good Humor.

Decorative Scheme.

You are going to give your store a festive look, so the worn places, if they cannot be covered with goods on display, should be covered with evergreen, bought by the yard, caught up here and there with red rosettes. A festoon of the evergreen running down the center of the store, with branches to the side, adds to the festive appearance. Use all the counters and stands you can on which to arrange articles, assembling them as much as possible under one price, particularly the Toys. Thus you will have a stand for 10-cent articles, one for the 25-cent, 50-cent and $1, and so on. Bring down to the store your phonograph, and keep it going, especially in the evenings.

The Windows of the Store.

After all is said and done, your best advertisement is going to be your windows. Trim them so they can be changed frequently, avoiding anything elaborate, because now, if never before, you will have a fine variety of goods to display. What is essential, though, is decorative backgrounds, plenty of greens and red, mistletoe, and so forth. White cheesecloth should be twisted around light drops and pillars, and by all means have plenty of price cards.

THE December issue of "Hardware Hints," published by the Logan-Gregg Hardware Company, Pittsburgh, Pa., comes out appropriately with an attractive front cover design suggestive of the Christmas season. This number is almost exclusively devoted to the subject of the Hardware merchant's holiday business, and many practical suggestions are given as to means and methods for increasing it.

The Twin Falls Hardware Company, Twin Falls, Idaho, is about to erect a new warehouse.

CATALOGUE OF GILBERT & BENNETT MFG. COMPANY.

GILBERT & BENNETT MFG. COMPANY, Georgetown, Conn., and 277 Broadway, New York, has lately issued a handsome catalogue covering its extensive line of Wire products. The book is a very substantial one, with stiff cloth binding and printed on a fine grade of paper. There are many excellent illustrations, including views of the company's mills at Georgetown, Conn., and Wireton, Ill. In addition to staple lines, such as Wire Cloth, Poultry Netting, Fencing, Fence Supplies, &c., the company's product includes Desk and Floor Railings, Gates, Stable Fittings, Coal and Sand Screens, Spark Guards, Wire Lathing, &c. All price-lists and descriptions are complete and well arranged, and there is also much useful information and tables of value to the trade.

A PAGE ADVERTISEMENT OF STOVES AND RANGES.

A STOVE ADVERTISEMENT which brought ample returns to Bard & Cheney, Port Allegany, Pa., is reproduced herewith in very much reduced size. The announcement occupied a whole page in their local paper and was subsequently reprinted in the form of a poster-circular and distributed about the town and placed in farmers' packages. It will be observed that the firm handles several lines of Stoves and Ranges made by different manufacturers. One reason for this is that the house finds it desirable to carry both high and low priced goods, and one or two of the manufacturers whose products are shown do not supply Ranges of the cheaper class.

It will be noted that prices are mentioned freely throughout the advertisement and that the assortment offered is an extensive one. On all Gas Ranges and Heaters priced $10 and above the firm makes no charge for labor in setting up, if the work does not take over 2 hours' time. In connection with the various lines featured some of the more important and interesting points in regard to construction are mentioned. The manner in which this is done in the case of Gas Ranges is reproduced below:

On low priced good quality Gas Ranges we have been 'way ahead of all competition. Our Indian Queen Range at $13 is here briefly described: Body made of polished blued steel—no enamel to burn off. Range stands well off floor to permit cleaning floor. Eight-inch lids, in two sections. Asbestos packed needle valves. Adjustable mixers on top burners. All oven linings of heavy steel and removable. Very little gas required to heat oven, as oven burner is oval in shape, distributing heat evenly to all parts. Best type of burners, all removable.

Other Ranges up to $30, equally good value for prices asked.

Convinced of the efficacy of newspaper advertising, Bard & Cheney have enlarged their regular space to 8-in. double column, and at intervals use a larger space. What are known as "locals" are also employed occasionally. The firm changes its announcements each week, using a different advertisement in each paper.

STEAM AND HOT WATER HEATING
WOOD HEATERS
STOVES FOR 1907-1908
The largest and most complete line of stoves ever shown in this section. We have selected the best sizes and styles from the best manufacturers in the country, and our guarantee goes with every stove.
Only a partial list is shown and described on this sheet as space will not permit of an entire showing. On all gas ranges and heaters priced $10 and over we make no charge for labor in setting up if it does not take over two hours.
GAS HEATERS
GAS RANGES
STEEL RANGES
COMBINATION
COTTAGE HEATER
WOOD HEATERS
PEERLESS ODIN
BARD & CHENEY
STOVES
MAIN STREET - Both Phones - PORT ALLEGANY, PA.
NO EXPERIMENTS IN THESE STOVES. ALL GUARANTEED

An Effective Page Advertisement of Bard & Cheney, Calling Attention to Stove and Range Line.

THE BRODERICK & BASCOM ROPE COMPANY, St. Louis, Mo., with a view to getting a comprehensive opinion from business men in all parts of the country as to actual trade and financial conditions and the future outlook, has, through its personal representatives and by correspondence elicited opinions, which are presented in the current issue of its trade publication, "The Yellow Strand." It is therein stated that 25 per cent. of the responses go down on record as "fairly good" and "good." Only 15 per cent. say "bad." Three-fifths of the 85 per cent. say unhesitatingly "good" in capital letters. A Michigan house writes: "Business is very good in this section. We have not been troubled with the financial disturbance up to the present time." Reports from other sections of the country, while noting the effects of financial stringency, express confidence in its early abatement, and a resumption of business upon a somewhat reduced but satisfactory basis. In conclusion it is observed: "No one seriously doubts that the natural resorces of the United States are sound and safe, for while this country contains but 5 per cent. of the world's population, we raise 80 per cent. of the world's corn; 75 per cent. of the cotton, and 20 per cent. of the wheat. Also 55 per cent. of the copper, 52 per cent. of the petroleum, 42 per cent. of the steel, 40 per cent. of the iron, 33 per cent. of the silver, one-half of the coal and one-fourth of the gold."

THE DAIRYMEN'S SUPPLY COMPANY, Lansdowne, Pa., has recently removed its Philadelphia store from 1937 to 1919 Market street. J. B. Crawford, formerly representing the company in Ohio and western Pennsylvania territory, is now in charge of the Philadelphia quarters. The company's catalogue, No. 19, entitled "Everything for the Dairy," comprises nearly 150 pages of text and illustrations, showing a very extensive line.

P. O. Department's Annual Reports.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., December 3, 1907.

THE campaign conducted by the advocates of a parcels post has received a decided setback from two high Congressional sources. In an informal letter to Postmaster-General Meyer, Speaker Cannon has given the intimation that it is very doubtful if Congress at the session which has just been inaugurated can be persuaded to supplement the present facilities for transporting merchandise through the medium of the mails. As the principal basis for this opinion Mr. Cannon refers to the united opposition of retail merchants in all parts of the country. Chairman Overstreet of the House Post Office Committee has reaffirmed the position he has taken in former Congresses on this question. Mr. Overstreet addressed the Commercial Club of Indianapolis a few nights ago, and declared that his attitude had not been changed by anything brought to his attention in connection with the movement recently set on foot by the Postmaster-General.

The position of these influential legislators on the subject of parcels post is the result of the crusade carried on by the retail merchants during the past three or four years, but the advocates of parcels post may be relied upon to use every means in their power to effect the passage of the legislation which they so much desire, and retail interests should see to it that there is no diminution of interest or aggressiveness in their opposition to these measures.

Postmaster-General on Extension of Parcels Post.

Every retail merchant should read with close attention the text of those portions of the Postmaster-General's report, just issued, dealing with parcels post and postal note questions. Not only are they the utterances of the Cabinet officer charged with the management of the postal service, but it is fair to assume that they present the strongest arguments that can be massed in favor of the proposed legislation. Concerning the proposed reduction in the general merchandise rate, the authorization of a special parcels post on rural delivery routes and a system of cheap postal notes, the Postmaster-General says:

Previous to the year 1863 the weight limit of a parcel for transmission through the mails was 3 lb. That year the weight limit was made 4 lb. for deliveries in the United States. No increase has been made since that time except on parcels destined to foreign countries. We have now conventions with 33 foreign countries. With 9 countries the limit of weight is 4 lb. 6 oz.; while with 24 it is 11 lb. The postage in all but four cases—Chile, Peru, Ecuador and Bolivia—is 12 cents per pound.

SOME INCONSISTENCIES.

To illustrate the inconsistencies in connection with the parcels post service, attention is drawn to the following conditions: An individual entering any post office in the United States with two parcels weighing 4 lb. each will be obliged to pay 64 cents on the one addressed to New York City, for example, while on the one destined to a foreign country, although it usually passes through New York City, the charge is but 48 cents. Should the weight be 4 lb. 6 oz. the package addressed to a resident of New York City will be denied admission to the mails by the postmaster, while the package intended for the resident in a foreign land will be accepted and forwarded, probably via New York, at the rate of 12 cents a pound. The parcel for the foreign country would be received, in most instances, up to 11 lb. In other words, our own people must pay 4 cents a pound more for the privilege of dispatching packages to each other than when destined to residents of a foreign country. I therefore urge a rate of 12 cents a pound for packages forwarded through the mails to post offices in the United States and its possessions, subject to the same regulations as exist at the present time, with the exception of increasing the weight limit to 11 lb. The following rates on packages weighing less than 1 lb. are recommended:

	Cents.
1 oz.	1
Over 1 oz. and not exceeding 3	2
Over 3 oz. and not exceeding 4	3
Over 4 oz. and not exceeding 5	4
Over 5 oz. and not exceeding 6	5
Over 8 oz. and not exceeding 12	9
Over 12 oz. and not exceeding 16	12

SPECIAL PARCELS POST ON RURAL DELIVERY ROUTES.

I recommend the establishment of a special parcels post system on rural delivery routes for packages originating on a rural route or at the distributing post office for delivery by rural carriers to patrons thereof at a rate of 5 cents for the first pound and 2 cents for each additional pound or fractional part of an additional pound up to 11 lb.; for 2 oz. or less, 1 cent.; over 2 oz. and up to 4 oz., 2 cents.; over 4 and up to 8 oz., 3 cents.; over 8 and up to 12 oz., 4 cents; over 12 oz. and up to 1 lb., 5 cents.

This will be a great boon to the farmers who have not the conveniences for obtaining the necessaries of life such as residents in cities enjoy. A special parcels post on rural routes will facilitate consumption and thereby increase the business of the country merchant. Increased trade for the country merchant means increased orders for those from whom he purchases his supplies. A further fact is that the increased cancellations will advance automatically the salaries of the postmasters of fourth-class offices. The remaining revenues derived from the parcels post on the rural routes will be clear gain and will go far toward making the rural service in time self-sustaining. The rural delivery is now established extensively throughout the United States, there being 38,266 routes in operation, supplying about 15,000,000 people, and will cost $34,000,000 this year.

RURAL DELIVERY REVENUES.

The history and advantages of the rural delivery should be understood by our people. There is a feeling in many quarters that it is an extravagance and an unnecessary drain upon the postal revenues. The first rural route was established in the latter part of 1896, $14,840 being expended for rural delivery during that fiscal year. At that time the postal deficit was $11,411,779. During the fiscal year ended June 30, 1907, the expenditures for rural delivery aggregated $26,671,699, while the postal deficit showed a decrease, as compared with 1897, of $4,800,000, the deficit amounting to $6,653,282. This would seem to show that while the expense incurred for maintaining rural delivery is great, yet the rural delivery has been instrumental in increasing the general postal receipts. However, its benefits to our people cannot be measured in dollars and cents.

A more extensive use of the rural routes by extending the parcels post privilege will not only lead to an increased consumption, but a consequent larger trade, due to the facility with which the rural patrons may obtain their requirements. It means also a great saving to the farmer during the planting season and the period of harvesting his crops, as it will enable him to devote himself to his work and procure his small supplies without loss of time.

COUNTRY MERCHANT VERSUS OUTSIDER.

The retail merchants in cities have found that they increased their trade by delivering goods to their customers. The parcels post on rural routes will enable the local country merchant to deliver goods to his buyers at an average cost of about 2 cents a pound, or 25 cents for 11 lb., while the wholesale merchant, in order to reach these consumers by mail, will be compelled to pay 12 cents a pound, or $1.32 for 11 lb. Therefore, to gain the benefit of the special rates on rural routes they would find it necessary to ship by freight to the point of the rural routes, and be obliged to establish many thousands of agencies and depots for handling. It is of incalculable importance that the country merchant should exist and prosper.

GOOD ROADS WILL FOLLOW.

Another inevitable result will be the improvement of the roads due to the increased transportation over the rural routes. One cannot improve the roads without benefiting the farmer, nor can one benefit the farmer without benefiting the rest of the country. The condition of the roads is a sign of the civilization of the community through which they pass. Improved roads mean improved conditions and better facilities for the farmers to transport their goods in bulk to the railroad, by the use of which they must reach the markets in the various parts of the country. It has been shown, especially in the South, that the establishment of rural routes has increased the value of farms, and a still further advance in valuation will come from the betterment of the roads following the establishment of a special rural parcels post. The necessary machinery is in operation for the handling of such a post, which was not the case when parcels post extension was advocated 15 years ago.

PROPOSED POSTAL NOTE.

There is a great demand from the public for postal notes. Soon after my induction into office the Third Assistant Postmaster-General was directed to thoroughly investigate the subject and to prepare a suitable post note bill which would furnish a cheaper and more convenient form of remittance through the mails of sums in denominations of 10, 20, 25, 30, 40, 50, 60, 70, 75, 80 and 90 cents, $1, $1.50, $2 and $2.50. Attention is invited to the draft of a bill in the annual report of the Third Assistant Postmaster-General, which I urgently recommend.

The passage of such a measure is of the utmost importance both to the public and to the Department, and would tend to do away with the objectionable practice of sending postage stamps through the mails.

The demand is for something which shall not be merely cheaper, but obtainable almost anywhere and with less formality than the money order, and which shall be readily convertible into cash at the post office by the receiver.

Not a Convincing Statement.

It cannot be said that the Postmaster-General makes a very convincing argument in favor of the reduction in the general postage rate on merchandise; in fact, the only consideration which appears to weigh with him is the fact that the domestic merchandise rate is now higher than the international parcels post rate. This is hardly a fair standard, however, for it is well known that international postal rates are based on principles of comity and reciprocity, and no claim has ever been made that the service is self-sustaining.

What the Postmaster-General says about the desirability of a cheap parcels post rate on rural routes reflects a notable lack of information as to modern retail merchandizing methods. Practically every point in this feature of the report has been met most effectively by President Miles of the National Retail Hardware Association in his letter to the Postmaster-General recently printed in *The Iron Age*.

Assistant Postmaster-General's Argument for Cheap Postal Note.

To understand the character of the fight to be made by the Post Office Department for the authorization of a cheap postal note, retail merchants should examine closely the statement made with reference thereto by the Third Assistant Postmaster-General in his annual report. In this report there is presented the text of a bill which Congress will be asked to enact, and which is similar in its general provisions to the measure urged upon the last Congress by First Assistant Postmaster-General Hitchcock. It is based upon the Canadian system, and authorizes the use of notes of denominations ranging from 1 cent to $2.50, notes under 10 cents being issued without fee, while the charge for notes of higher denomination would be 2 cents each. In support of the measure the Third Assistant Postmaster-General presents an argument in part as follows:

The demand for a note of the kind proposed, or something similar, is based upon the fact that under present conditions many people are compelled to transmit small sums of actual money in ordinary or registered mail, or to make use of postage stamps for the purpose. It is desirable and in harmony with up to date business methods that, as far as practicable, remittances not be made in actual cash.

POSTAGE STAMPS FOR REMITTANCES.

The evil of using postage stamps for remittances has assumed such proportions that it is a question whether Congress should not suppress it by appropriate legislation. Business firms throughout the country annually receive as remittances postage stamps aggregating in amount millions of dollars. Large quantities of these stamps are received in a damaged condition, unfit for use, and, moreover, the number thus forwarded is in many cases far in excess of that necessary for use by the firms to which they are sent and they are sold at a discount. Furthermore, the use of postage stamps for remittances in a measure thwarts the aim of the Department to justly compensate its postmasters. Business firms located in large cities naturally use as many of these stamps as they need, with the result that their post offices are obliged to perform a great deal of labor for which no credit is given. On the other hand, as stamps used for remittances are usually bought at small offices where the postmaster's earnings are based on cancellations, such postmasters are thus made to incur additional responsibility for which they receive no remuneration. Again, if the stamps are purchased at an office where gross receipts count equal injustice follows, for sales are shown in connection with which no work is done beyond the mere selling of the stamps.

FIFTEEN DENOMINATIONS.

Domestic money orders are issued under the law for sums not exceeding $2.50 for a fee of 3 cents, and for sums over $2.50 and not exceeding $5 for a fee of 5 cents. Under the provisions of an act embodying the features of the proposed bill postal notes might be issued in 15 different denominations—10, 20, 25, 30, 40, 50, 60, 70, 75, 80 and 90 cents, $1, $1.50, $2 and $2.50; and if fees for the issue thereof were charged at the rate of 1 cent for notes from 10 cents up to 90 cents and at the rate of 2 cents for notes from $1 up to $2.50, a remitter might send by the use of one note, at a cost of 1 cent, any one of eleven different amounts (multiples of 5 cents) not exceeding 90 cents. Sums of $1, $1.50, $2 and $2.50 could each be sent in a single note at a cost of 2 cents, and the sum of $5 in two notes at a cost of 4 cents. By using two or more notes the purchaser might send any one of the 96 different amounts of $5 and under at a cost not exceeding 5 cents, any one of 81 different amounts of $4.50 and under at a cost not exceeding 4 cents, any one of 57 different amounts of $3.40 and under at a cost of not exceeding 3 cents, and any one of 31 different amounts of $1.80 and under at a cost not exceeding 2 cents.

If, in addition to notes of the 15 denominations above specified at fees as above stated, notes of the denomination of 1 cent, 2, 3, 4, 5, 6, 7, 8 and 9 cents were furnished to the public without further fee, further advantageous combinations might be made.

CHEAPER THAN MONEY ORDERS.

The postal notes contemplated in this bill for amounts of 10 cents and over would be sold at lower rates singly than money orders for corresponding amounts, but as their issue would involve far less expense to the Government it is believed that their introduction would result in an increase rather than impairment of the net revenue of the service.

Postal notes of denominations less than 10 cents, sold at their face value, would be furnished only to applicants singly for use in making remittances of amounts below 10 cents or between any two denominations of 10 cents and upward, and would be employed instead of postage stamps attached to a note, as in Great Britain and Canada, where stamps so attached, to a limited amount, are redeemed with the note.

FORM FOR RECEIPT.

To each of such notes would be attached a form of receipt, to be retained by the purchaser, which would bear the number and show the denomination of the note as well as the place of its issue. Production of this receipt would facilitate inquiry in regard to the note—would, in fact, serve as *prima facie* evidence of the holder's right to a duplicate note in case of loss or destruction of the original.

LITTLE LABOR INVOLVED.

But little labor would be imposed upon the purchaser or upon the issuing or paying postmaster in the issue and payment of these notes of fixed denominations, issued without written applications and without dispatch of an advice. The issuing postmaster would simply sign the note, stamp thereon the date of issue and hand the note to the applicant upon receipt of payment therefor. The purchaser of a note for 10 cents or more, in order to make the note payable to a designated person or firm, would fill in the name of the payee and the office of payment on lines therein provided for the purpose.

In a large degree, as these postal notes would supersede money orders for small remittances, the processes of auditing the accounts of postmasters would be simplified and rendered less expensive.

It is believed that the general introduction of the proposed postal notes would almost obviate the necessity for the use of postage stamps and coins in remittances, and result in a great diminution of the amount of actual money transmitted through the ordinary mails.

Money Orders Quite Adequate.

It will require a stronger argument than that above presented to convince the retail merchants that the proposed innovation is desirable. The manner in which "public sentiment" in the interest of a post check currency has been systematically worked up in recent years has been fully exposed in these columns in connection with hearings before the post office committees in the last Congress. Such currency as is proposed is no new thing. It was tried for 10 years, from 1883 to 1893, but was finally abandoned upon a recommendation of Postmaster-General Bissell, who, in his annual report for the fiscal year 1893, said:

It has been suggested that the postal notes have outlived their usefulness and should no longer be issued; also that the rates charged for all domestic money orders should be reduced and the form of the order simplified. I believe these changes would be desirable and that the revenue would more likely be increased than diminished thereby.

When the postal note was abandoned the money order fees were materially reduced so as to enable the public to purchase money orders for amounts up to $2.50 for a fee of 3 cents. This arrangement has met all reasonable requirements, and there has since been no demand for further facilities except such as has been artificially stimulated.

THE gas, electric and combination fixture business of the Rhode Island Chandelier & Electric Company, and the Hardware, plumbing and heating business of William B. Thompson, both of Providence, R. I., have been merged in a new corporation known as the Thompson Hardware & Chandelier Company, at Mr. Thompson's present location, 853-855 Westminster street. The company is incorporated under the laws of Rhode Island with a capital stock of $60,000. Harry F. Heustis is president, William B. Thompson treasurer and John R. Bemis secretary.

THE STUDEBAKER BROS. MFG. COMPANY, South Bend, Ind., has been notified by the Jamestown Exposition Jury of Awards that its exhibit of Automobiles, Street Sprinklers, Garbage and Dump Wagons, Contractors' Wagons and Trucks has been awarded a diploma and gold medal for vehicles of that class.

ARGUMENTS AGAINST PARCELS POST.

J. KORNELY, Milwaukee, president of the Wisconsin Retail Hardware Association, has written a letter to Postmaster-General Meyer, in which he presents a number of arguments against that official's proposed parcels post legislation. We give the following extracts from Mr. Kornely's communication:

The object that you allege to attain is the good of the farmers. As the farmer is the consumer the proposition is a fruitless one, because you make the farmer pay directly on the goods bought and indirectly by taxes to sustain the carrier business.

If the parcels post would be regulated according to distance, so that the farmer would pay proportionately the same cost of carrying from the village to his farm that he would have to pay from New York to his farm in Wisconsin there would be nothing dishonest or foolish about the transaction, and yet it would be unbusinesslike. The queer part of the transaction is the charging of the same rates for 1 mile and 4000 miles, which is a violation of every business principle, and if a man were to go into the freight business on that plan he would be stamped as a swindler or a fool.

The carrying of freight is purely a commercial enterprise differing in principle from the carrying of communications, news and intelligence among the people and between our people and foreign countries, in the form of mail. Once the territory of legitimate commerce is invaded the liberty and independence of the citizen is trespassed upon, and the liberty and independence of the country proportionately destroyed.

Another feature would be the confusion in prices, the farmer receiving his goods at home paying more than his neighbor who purchased in town. Besides, it seems, there must be the additional expense of packing to be charged against the consumer. As neighbors exchange gossip over teacups the variable prices of their local dealer would be gone into and a resolution easily voted to give their trade to some concern a thousand miles away to spite the local dealer.

Another problem would be the disadvantage of selecting the kind of goods and the prices of the goods desired, which could not be done unless the local dealer got out a large catalogue of everything that he carried and furnished it to the farmer. In this way the farmers would obtain a library of confused prices and descriptions, which in time would bring them disappointment and disgust, and would greatly add to the expense of the local dealer.

If the Post Office Department desires to give relief to the entire people it should reduce the rate of postage on sealed matter to 1 cent per ounce. There is no more trouble in handling a sealed letter than an unsealed one and it weighs less on the average. Therefore, let us have a 1-cent rate.

If trade is left in its natural channels, unhampered in localities by law, and not subsidized in other places by misappropriated taxes upon the people, the small trader will have an equal chance with catalogue houses to make an honest living; otherwise, the money will be drained from the small localities to the catalogue house, and the locality, as such, becomes impoverished and our peasantry degenerate. Any one who has studied the question of absentee landlordism will readily see the national calamity to which the proposition leads. The destruction of the small trader and the country village is worse, perhaps, than race suicide. After his picture of sweet Auburn, in "The Deserted Village," Goldsmith puts the argument in its strongest form:

> Ill fares the land, to hastening ills a prey,
> Where wealth accumulates and men decay;
> Princes and lords may flourish or may fade,
> A breath can make them, as a breath has made;
> But a bold peasantry, their country's pride,
> When once destroyed, can never be supplied.

AT a recent meeting of its stockholders the Milwaukee Stove & Heater Company, Milwaukee, Wis., decided to discontinue its retailing department in all lines, and will hereafter give exclusive attention to the jobbing trade. C. R. Seager, formerly manager of the Milwaukee office of the American Radiator Company, will have charge of the heating goods department.

J. C. MCCARTY & Co., 21 Murray street, New York, who formerly had the account of the H. C. Tack Company, Cleveland, have been appointed exclusive sales representatives for both domestic and export territory of Holland Mfg. Company, Baltimore, Md., maker of Tacks, Glaziers' Points, Staples, &c.

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Trade in British India, Burma and Ceylon.

We are indebted for the following advices to John L. Sardy, who is now in this country after completing a business trip around the world.

COMING from the Far East and the Philippines the traveler reaches British India via Singapore to Madras, a run of over 1800 miles. British India comprises about one-thirtieth of the world territorially, and contains about one-fifth of the world's population. Its great wealth is in the hands of the few, most of them Maharajahs, or 'Rajahs, as commonly called. These native princes derive their income from taxes on the people of their respective States, but they have to pay to the British Government a certain portion of these revenues. For instance, the Rajah of Mysore pays about 34 lahks or rupees per annum, equal to about $1,090,000. The Nizam of Hyderabad is said to have the largest income of any of the native rulers, deriving from his State an annual sum of 300 lahks ($9,600,0000), 1 lahk being about $32,000 or 100,000 rupees.

Hyderabad is the sole remaining large Mohammedan State, and, of course, the Nizam is of that faith. Bhopal ranks second as a Mohammedan State, and has been ruled for years by the Begum, who is a woman. The Gaekwar of Baroda comes next to the Nizam. He is a Hindu and is said to have an income of about 150 lakhs ($4,800,000).

Princely Idiosyncrasy.

The native Prince or Rajah loves ostentation and pays liberally for it. A tale is told of one who drove to a large English shop in Calcutta with his retinue and sent one of his attendants into the establishment with the request that upon his entrance the doors were to be locked, as he did not care to have any one come in while he was selecting his purchases. At first the English proprietor demurred, but concluded it would be worth his while to consent and a very wise conclusion it turned out to be. The place was stocked with very costly articles in magnificent showcases, and upon the entrance of the Rajah he looked about for a while and then instead of selecting different articles from the showcases he pointed first to one, then to another, saying he would buy the showcases complete with their contents and so on, until he had bought showcase after showcase with their expensive contents, so that the proprietor's stock was nearly denuded, and all the time not a single question asked as to price. That English shopkeeper is waiting for a Rajah to again ask him to lock his doors.

Caste Differentiation.

Among Europeans generally class distinctions are fairly well defined, but one has to go to British India to see this custom carried out to the letter. Caste in India goes back into the ages. It has been for all time, is strictly adhered to, and is denoted by different colored pigments on the forehead. The highest caste is the Brahmin or priest class, next comes the warrior class, known as Shatrai, followed by the Shudra caste or trade class, after which comes the coolie or laboring class and last and lowest of all is the Pariah.

The highest caste do not drink spirits or wine, neither do they smoke, but the lower castes do. In these castes, however, a son never drinks or smokes in the presence of his parents, and in the same castes it is almost a crime for a woman to drink.

Perhaps husbands in other parts of the world would like to have their wives take pattern of the Hindu consort. She never calls to her husband to come to her, but goes to him, and, bowing slightly, speaks of her requirements. Both have great reverence for their parents, and do not speak to one another in their presence, nor does the husband or wife call one another by name in the presence of any one.

There are about 75,000,000 Mohammedans in India, but they are outnumbered by the Hindus. Most of the Rajahs are Hindus, who form the richest class in the country.

Following an ancient English custom whereby names of people were derived from their occupation, like Smith, Archer, Turner, Falconer, &c. Hindus are found bearing such names as Miss Bride Inspector, Mr. Contractor, Mr. Captain, &c.

Treating of Hardware only, Madras from an importing point of view, is of less importance than either Calcutta or Bombay, at the same time it is a large city of over 500,000 inhabitants, with many excellent firms, some of sufficient magnitude to be ranked among the merchant princes of the world.

Mohammedan Big Four.

There are four large wholesale Hardware dealers in Madras. They are all Mohammedans from a place called Sidhpur in Northern India, and, strange to say, they are all related to one another, which by no means prevents them from being keen rivals in business. Outside of business their relations are of the most friendly character, but when it comes to securing a contract they are ready enough to cut one another's commercial throats. These four firms rejoice in the following picturesque names: Abdool Hoosian Jeevajee & Co., M. Mohamedally Jeevajee & Co., Shaik Mahomedally & Sons and Mohomedally Fezally & Co.

Of these the first two are probably the largest; in fact, their business is very extensive. One of them has about 12 go-downs or warehouses full of Hardware of all kinds, Iron Pipe, Pumps, Shafting, Water Meters, Galvanized Pails, Corrugated Sheets and all sorts of small Hardware articles. They like American Hardware and carry a good deal in stock, but complain strongly about the long time required for the execution of orders for American goods as compared with British. In going through their warehouses it is amazing to see the enormous stocks carried. They are always glad to see intelligent travlers, representing sound and responsible manufacturers, no matter what the nationality may be so long as the goods are what they require and the prices right. They understand their business thoroughly, and it is a pleasure to have dealings with them.

There are also one or two good English firms carrying Hardware as a part of their business, but mostly for retail trade.

American Trade Increasing, Notwithstanding Poor Packing and Invoicing.

American trade in Hardware is increasing and American commercial travelers are fairly frequent, in fact, more so than either English or German, there being few of the latter nationality. All classes of Hardware are bought—Tools, Axes, Machine Tools, Machines, &c. A common cause of complaint regarding American shipments is bad packing. In this respect the Americans lead easily; Germany comes next, and England is the best of all. Out of one American shipment of 20 cases seven arrived broken, and so many goods were lost that only five cases resulted when repacked. Another amazing instance was a shipment of 80 cases, 66 of which arrived more or less broken or damaged.

Complaints are also made about delay and carelessness in invoicing. Sometimes invoices arrive one or even two mails later than they should, and there was an instance of a shipment of a bale of paper in which was packed a parcel of perfume not indicated in the invoice. Had the firm not been a well-known one to the customs officials it would have been fined 1000 rupees. England in these details is better than America, and it behooves our manufacturers to use more care, as otherwise business is sometimes diverted to England even at higher prices merely on account of indifferent invoicing and packing.

Hypercritical Native Customs Officials.

It must be borne in mind that the officers of the customs are mostly natives, who assume an air of authority and quibble about absurd trifles, and often some slight error in the invoice causes the importer no end of trouble and more or less expense. The custom house

papers pass through hand after hand, and should invariably be accurately drawn up.

Duties in India are not high, compared with the United States tariff. The range is from 2½ to 10 per cent., averaging about 5 per cent.

Duty is charged on commercial travelers' samples, and the experienced traveler carries with him the manufacturers' invoices of his collection. By the way, this applies to nearly all parts of the commercial world. Upon leaving the country a customs certificate is issued to the effect that none of the samples have been sold, and in time the duty is refunded. It usually takes about six months to get it back, and the best plan is to leave the matter in the hands of some reliable custom house agent.

City of Magnificent Distances.

Madras is called the City of Magnificent Distances. It is about 9 miles long and 2 miles wide, with fine, well laid out roads, but probably the poorest lighted city of its size in the world. There is no electric light, but it is said a private company is being formed and will start operations in a couple of years. Of this, however, there is no certainty; meanwhile, the dreary light of four or five candle power given by widely parted kerosene street lamps forms the only guide to the wayfarer at night, and it is better to stay at home. The American made Dietz street lamp, giving over 20 candle power, is being introduced, and unless the electric light comes along will probably be adopted throughout.

Unique Well System.

In Madras there are many wells, and large ones at that; about 20 ft. in diameter, with a framework on which is fixed a huge wooden walking beam, to which, instead of a rope or chain, is attached a long bamboo stick, to which the bucket is fastened. It takes three coolies to operate the well. One sits on the edge of it and directs the bucket; the other two march back and forth on the walking beam, making a seesaw of it, so that the bucket is alternately lowered and raised, and the water is drawn up and poured forth, bucket after bucket all day long, for irrigating the land. All this is picturesque among the palm and cocoa trees, but it does not enhance the sale of American Pumps.

A Sewerage Farm.

On the other hand, there is a sewerage farm of 164 acres owned by the corporation of Madras, where 14 Pumps, ranging from 5 to 15 in. in diameter, are employed, and it is said to be for its size the most prolific farm in the world. At any rate they claim to raise a grass crop every 20 days.

Carriage Building.

There is a carriage building firm in Madras, established over 60 years, making carriages complete, everything even to the lamps, the only manufactured part imported being the rubber tires. All the work is hand labor, even to resawing the logs. The artisans are all Indian natives, and they turn out excellent work. A mechanic takes about a month to construct a carriage body, and earns from 1 to 1½ rupees per day, say on an average about 40 cents. This is skilled labor and the pay is considered high. About 500 hands are employed, and the turnout is about 300 carriages per annum.

There is another carriage factory in Calcutta, established three years before the American War of Independence, employing about 700 native workers.

The wood used in the construction of carriages must be of Indian growth. Imported woods go to pieces in the Indian climate. The price of the best finished Indian coupé with rubber tires is about 1800 rupees, say about $575.

(To be continued.)

THE West Virginia Retail Hardware Association, Leslie Hawker, Shinnston, secretary, will hold its annual meeting at Elkins on February 18, 19 and 20. While no special feature will be made of Hardware exhibits in connection with the meeting, those who desire to make them will be accommodated, and for particulars should communicate with E. C. Linger, Elkins, where the convention will take place. It has been decided to admit traveling salesmen to membership in the association upon payment of $2, which includes first year's dues.

RETURN PREMIUM NOW 50 PER CENT.

AT the last quarterly meeting of the Retail Hardware Mutual Fire Insurance Company of Minnesota, held on the 23d ult., the directors announced that the return premium or dividend for 1908 would be 50 per cent. This is a noteworthy event in the history of Hardware mutual insurance companies, as it is the first time the return premium has been so large as to effect a net saving to the policy holder of one-half the premium paid. The Minnesota company, of which M. S. Mathews, Guaranty Building, Minneapolis, is secretary, is the oldest of the Hardware mutuals, and has now been in operation for a period of eight years. At the close of the first year the directors felt justified in returning to the policy holders 25 per cent. of the premium paid. Since that time there has been no diminution in the size of the dividend returned, but in most years an increase of 5 per cent. The officers of the company naturally feel elated over the result of their economical and efficient administration, and are entitled to congratulations. The company's total insurance in force on November 23 amounted to $5,890,706, as compared with $5,738,245 on August 31.

WHO'S AFRAID.

WE give the following extract from a letter under the above caption recently addressed to the merchants of the country by a prominent merchant of New York City:

The country is full of cotton, wheat, corn and other agricultural staples, the basis of all trade, and why should everybody stop trading. You will say we cannot get money to move the trade that is waiting at our doors. Why not? There is a lot more money in the country than there was a month ago, before we were scared by a handful of evil doers.

Who is responsible for the lockup? It is your bank among others. Its managers have lost their heads; they are frightened without real cause; they are the ones who are locking up currency. Make them disgorge or withdraw your account. The moment they let out their hoardings into usual business channels, the wheels of trade will commence to turn again, and instead of hysterically trying to invalidate contracts, you will soon be pushing for deliveries.

If every business house will go to work with a will to convince their customers that there is no real cause for suspension of business, confidence will be restored almost immediately. Will it not be worth while for us all to take a hand in overcoming this unreasonable scare? Conditions are such that we are sure it can be accomplished—and in a very short time—if all will put their hands and minds to the plow. In union there is strength. Let us try it.

PRICE-LISTS, CIRCULARS, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

HENRY ROWE MFG. COMPANY, Newaygo, Mich.: Illustrated catalogue and price-list circulars of Turned Wooden Ware, Benches, Trucks, &c.

MARSHALL-WELLS HARDWARE COMPANY, Duluth, Minn.: Illustrated catalogue No. 103 entitled "Modern Heating," and referring to Steam, Hot Water and Hot Air Heaters and Supplies, Plumbing Goods and Tools, &c.

ALEXANDER BROS., Philadelphia, Pa.: Price-list, circulars, &c., devoted to Leather Belting.

CHICAGO RAWHIDE MFG. COMPANY, Chicago: Descriptive catalogue with price-lists, codes and general infor-

mation referring to Belting, Lacing, Rawhide, Gears and Pinions and Mechanical Leather Goods.

COLUMBIAN HARDWARE COMPANY, Cleveland, Ohio: Attractive catalogue listing, illustrating and describing the extensive line of goods made by the company, including Spring Hinges, Door Springs, Screen Door Hardware, Registers, Vises, Anvils, &c.

BURDELL SWEAT PAD COMPANY, 176 West Broad street, Columbus, Ohio: Catalogue devoted to Hair Filled Horse Collar Sweat Pads, Saddle Blankets and Cart Pads.

L. H. MAN & Co., 111-117 East Houston street, New York: Annual illustrated catalogue and price-list of Refrigerators for 1908. Also folder devoted to three styles of Water Coolers.

CINCINNATI BUTCHERS' SUPPLY COMPANY, 1986-2008 Central avenue, Cincinnati, Ohio: Catalogue No. 21, illustrating Refrigerators, Fixtures, Tools, Butchers' Clothing, Refrigerating Machines, Slaughter House Equipment, &c.

REQUESTS FOR CATALOGUES, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM THE OLATHE HARDWARE COMPANY, Olathe, Cal., incorporated with a capital stock of $20,000, carrying Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Sporting Goods, Furniture and Queensware.

FROM GRAFTON HARDWARE COMPANY, Grafton, W. Va., incorporated with a capital stock of $25,000. The lines handled are Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods and Pipe. Builders' Hardware and Carpenters' Tools have recently been added, new Shelf Boxes having been installed.

FROM THE EASTSIDE HARDWARE & TOOL COMPANY, Oakland, Cal., which has recently been incorporated with a capital of $50,000 to handle Shelf Hardware, Stoves, Paints, Sporting Goods and Machine Shop Supplies. The incorporators are F. B. Ladd, W. S. Britt, J. M. Ledgerwood and A. N. Lewis.

FROM MCSHANE-MCINTYRE SUPPLY COMPANY, Biloxi, Miss., recently established, wholesale and retail merchants in Builders', Marine and Carriage Hardware. The company also desires the agency for a good Ready Mixed Paint.

FROM SMITH & RIDDER, purchasers of the stock of Johnson & Feiring, Galesville, Wis., handling Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, Sporting and Athletic Goods.

FROM ROCKTON HARDWARE COMPANY, Rockton, Ill., handling Shelf Hardware, Stoves, Tinware and Paints, whose store has recently been destroyed by fire.

MISCELLANEOUS NOTES.

Pennsylvania Black Filler.

The Pennsylvania Black Filler & Paint Company, Williamsport, Pa., is offering a black iron filler which, it is asserted, combines a high degree of sharpness with a maximum of body. The company confines itself to the manufacture and sale of the dry pigment only, and has recently installed new machinery which will enable it to secure any degree of fineness and execute orders promptly.

The Union Miter Box.

The Dosch Mfg. Company, Bridgeport, Conn., represented by J. J. Halpin, 62 Reade street, New York, is manufacturing the Union miter boxes, patents for which are pending, two styles being shown herewith. It is asserted by the maker that miter boxes, no matter how accurately produced, often do not give expected results unless the saw is filed absolutely true and even, and also that on a miter the saw will lead one way or the other. The Union miter box is so designed, it is said, that by a twist of the wrist the saw can be forced to lead under either way, if so desired, but that it will cut square if allowed to run freely without twisting the saw, a feature possessing advantages both ways in practical operation. By pressing together the swinging lever and handle the locking pin is released and the friction on the handle is so strong that it locks automatically at any degree, when the hand is removed. The saw guide

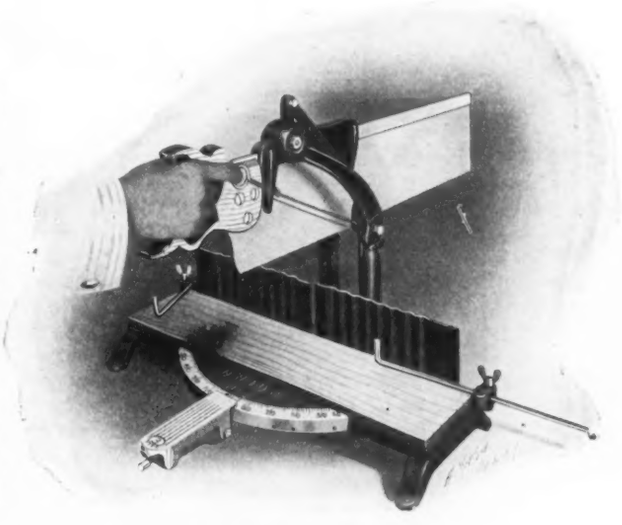


Fig. 1.—Union Miter Box.

is milled the whole length, the graduated plate is brass, nickeled, the swinging arms and vertical posts are malleable iron, and the back of the box is pressed steel. In moving the saw up and down it always maintains a vertical position, so that a tenon or dado, the same depth in both edges, can be cut without the necessity of adjusting two stops. For adjusting the depth of a number of tenons and dadoes there is but one screw to turn slightly on the vertical post. In the Nos. 2 and 3 sizes,

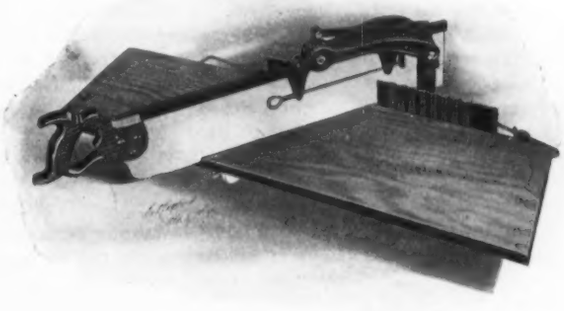


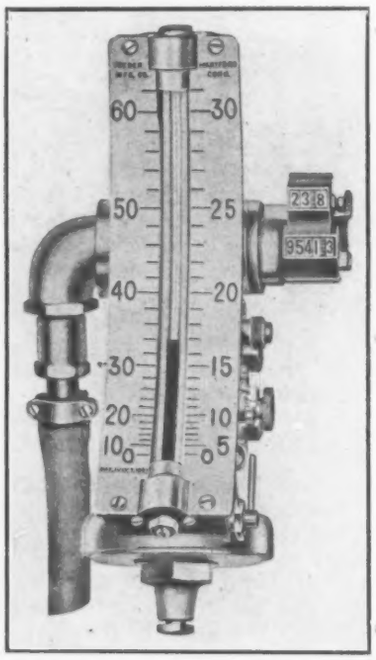
Fig. 2.—Similar Box Simplified.

using a 28-in. saw, a board 20 in. wide can be cut square, or a board 14 in. wide mitered, and, being open in front, this construction is especially favorable for use in mills and by contractors, because long lengths of siding, casing, flooring, molding, &c., can be entered quickly and cut to special lengths. Other features are that the saw is always out of the way when not actually cutting, and when through sawing, the user lifts the saw holding mechanism and it locks automatically. In the process of sawing a

slight pressure on the locking pawl rod releases the saw and the weight of the guide brings it down to the work with but slight effort. In cutting tenons the mechanic marks on the end of the wood the desired depth of cut and lowers the saw to the table, when with a few turns of a thumbscrew in the rear of the vertical post the saw is raised until the teeth are even with the mark, so that the saw will only cut to that depth. The two illustrations represent miter boxes similarly made, Fig. 1 being the more complete with regard to gauge and other refinements, the box in Fig. 2 being sold at a less price.

The Veeder Tachodometer.

The Veeder Mfg. Company, Hartford, Conn., has recently put on the market an improved form of tachodometer here shown. As the name implies it is a tachometer and odometer combined. With this instrument attached to an automobile the occupant is enabled to read at a glance, the actual speed being made at any given instant in miles per hour, the red liquid column indicator constantly varying in hight as the speed of the

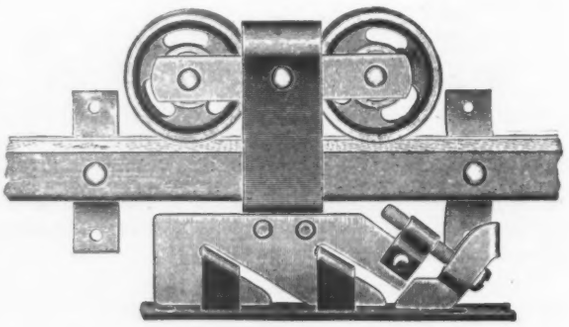


Veeder Tachodometer and Odometer Combined.

car changes. The odometer at the right simultaneously records the distance traveled for the trip, as well as the total mileage to tenths of a mile. The novel feature of the tachometer is the two scales reading from 0 to 30 miles per hour and from 0 to 60 miles per hour. For average motoring the right side scale will be most serviceable, but, if for any reason speeds between 30 and 60 miles are being made the rate per hour can be instantly known by giving a fractional turn to the pin lever at the bottom, right. This gives the option of two readings from one indicating column and from graduations sufficiently spaced to give practical and actual results not so easily discernible with closer lines. The tachometer portion of the instrument is referred to by the company as having no springs or variable elements, no delicate mechanism, but one moving part, can be accurately set to 0 at any time by the individual using it. The calibration never changes. Of the various principles available for registering speed that of the liquid centrifugal has been chosen. One shaft with paddle wheel permanently attached forms the single moving part, and all operations are based on the natural laws of gravity and centrifugal force. The Veeder indicator can be placed on the dash in the tonneau or limousine, and can be easily read at a considerable distance. The tachodometer can be supplied with attaching fixtures for all makes of automobiles, but in ordering the make, model of car, year of manufacture and size of front wheels should be given. Among the standard specialties of Veeder manufacture are cyclometers, odometers, tachometers and counters in a variety of styles for numerous purposes.

Simplex Ball Bearing Noiseless House Door Hanger.

The Richards Mfg. Company, Aurora, Ill., is offering the door hanger shown herewith. The chief features of the hanger are the following: Overhead center stop,

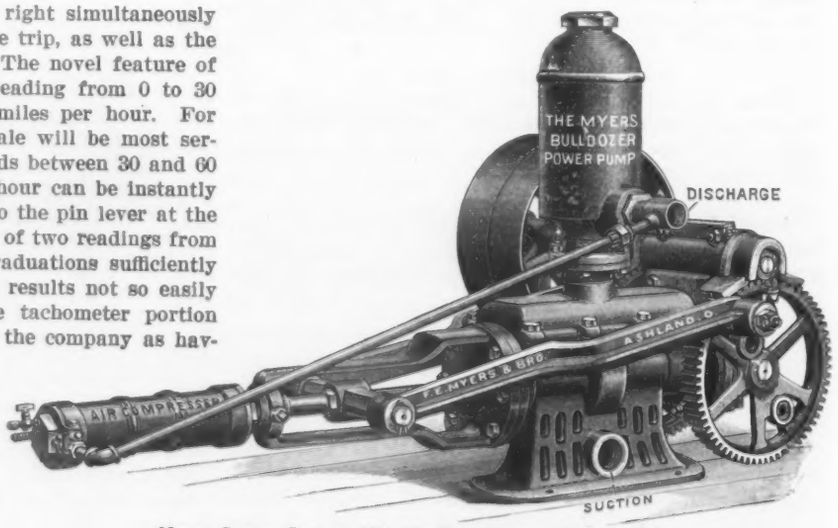


Simplex Ball Bearing Noiseless House Door Hanger.

noiseless wood filled track, endless run for doors of any width, tandem ball bearing wheels, adjustable hanger, four sets of balls to each hanger. Each set or half set is packed in a box, the center stop, floor guides and screws being packed with the hangers.

Myers Power Pump with Air Compressor Attachment.

F. E. Myers & Bro., Ashland, Ohio, have been developing their product of air pressure waterworks systems and are now offering a complete line of vertical and horizontal pumps equipped with air cylinders adapted for hand, windmill and power pumps. The accompanying illustration shows one of the firm's Bulldozer pumps with air pump attached which the makers state has been operated continuously for 30 days, maintaining an air pressure of 90 lb. against a reservoir with relief valve. The air compressor is a brass lined cylinder mounted di-

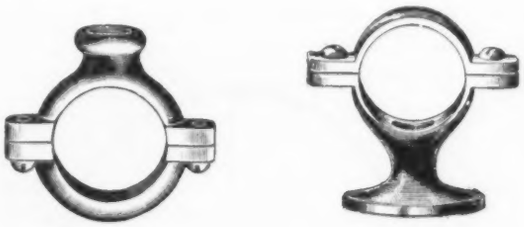


Myers Power Pump with Air Compressor Attachment.

rectly on the yoke guide of the pump, the piston rod serving as a piston for the compressor. A double leather plunger is used. The air is forced directly from the cylinder into the discharge pipe of the pump through which it is conveyed to the pressure tank. The entire outfit is complete within itself and comes mounted ready for operation. All the parts are said to be simple and substantially built so that the machine may be relied upon to pump air and water at the same time, requiring no special fitting or piping to be done by the installer other than is usual with the ordinary pump.

Pipe Hangers, Expansion and Toggle Bolts.

The Steward & Romaine Mfg. Company, Philadelphia, Pa., has recently added to its line the pipe hangers, expansion and toggle bolts herewith illustrated. No. 1 pipe hanger, Fig. 1, is made of malleable iron in sizes for ⅜ to 8 in. pipe. No. 2 is a brass and nickel-plated concealed screw pipe hanger for ⅜ to 2 in. pipe. Both Nos. 1 and 2 can be furnished with expansions as shown in Fig. 2. Brass double jaw single expansion bolts are regularly made with heads shown in Fig. 3, and square or hexagon heads are made to order. Recent additions in the company's toggle bolt line are illustrated in Fig. 4, all of these being made of steel.



No. 1. No. 2.

Fig. 1.—Pipe Hangers.

Fig. 2.—Expansion Bolt with Pipe Hanger Attachment.

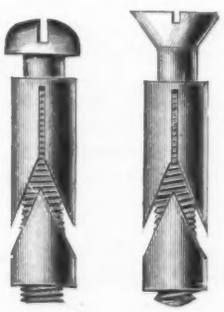


Fig. 3.—Brass Double Jaw Single Expansion Bolts.

Fig. 4.—Toggle or Anchor Bolts.

The Economy Foot Warmer.

The foot warmer herewith illustrated is an appliance designed to generate heat without combustion, and is made by the Economy Heating & Mfg. Company, 23-25 N. Jefferson street, Chicago. It is intended for use as a foot warmer, vehicle heater and general house service. It consists of a light steel case made in oval form with a tight fitting lid at one end. Heat is generated by a chemical composition contained in a strong sack, which, after being sprinkled with water, is placed in the heater case and the lid closed. Not to exceed 3 ounces of water is used for each heat, and this should be distributed evenly over the entire surface of the bag, the contents of which is then thoroughly shaken until heat is produced. An excess of water would result in hardening the composition and destroying its efficiency. After being properly moistened a good degree of heat will be maintained for 8 to 10 hr. The heater is said to be entirely harmless, containing no dangerous chemicals, and will not ignite fabrics or any other substance. It is made in different styles of finish, including enameled and striped, copper or nickel plated and highly burnished brass.

The Economy Foot Warmer.

Sterling Mounted Grindstone.

The Cleveland Stone Company, Cleveland, Ohio, is putting on the market the mounted grindstone here shown. It has a double treadle frame embracing the bicycle features of the company's Bi-Treadle; 1 1-16 and 1¼ in. heavy steel tubing is used, being braced securely with strong material. All rods and bolts are threaded, and as there are no cotter pins or loose parts, permanent rigidity is claimed. It is fitted throughout with malleable iron castings and supplied with the company's patent detachable ball bearing fixtures. It also has a large comfortable seat and clothes protector. Genuine Berea or Lake Huron stones are furnished from 19 to 22 in. in diameter and 1¾ to 2¼ in. thick. The complete weight is about 90 lb. The grindstone is shipped knocked down, crated in a strong square package which takes up little space and is easily handled. The company states that the device can be set up quickly and easily merely by the manipulation of one bolt.

Sterling Mounted Grindstone.

The Albright Mitering Machine.

We illustrate herewith a new and handy portable mitering machine, for which exceptional features are claimed by the manufacturers. The machine, we are informed, is capable of doing quick and accurate work. Its chief advantage lies in the divided semicircle which is arranged, not in degrees, but in number divisions from one to 32 from each end, so that the figure 16 represents the center of the semicircle and is at right angles to the back of the machine, and would represent an angle of 90 degrees. In using this machine, the question of the angle to be cut can be entirely eliminated, it being only

The Albright Mitering Machine.

necessary to get the angle desired with an ordinary bevel, which is then laid on the machine as shown, and by moving the arm to the number representing half the full angle on the divided semicircle, the arm is locked in position by means of a thumbscrew, and the molding cut to fit, in one operation. Right and left hand cuts can be made by simply reversing the position of the arm. The machine is made of iron, is light, weighing only 8 lb. complete. It has but one joint, that on which the arm revolves, and it is held firmly in position with a thumbscrew, on removing which the machine can be readily taken apart for carriage. The saw, which is a 16-in. high grade, steel back saw, accompanies the machine, and is held firmly in a carriage at the rear, the steel back fitting tightly into a guide and can be raised or lowered for any size molding without requiring any adjustment whatever, and gives a full open front to the machine. Inexperienced operators can use this machine, it is remarked, as well as practical ones, as the operation is complete and any cut desired can be had without any further cutting or fitting. It is being manufactured and placed on the market by R. Parsons & Co., Twenty-third and Hamilton streets, Philadelphia, Pa.

Improved Metal Wheel.

The metal wheel herewith illustrated is being offered by C. E. Bridges, 214 South Clinton street, Chicago. It will be noted that instead of the spokes being riveted into the rim according to usual practice, they are made in one piece and are laced through loops in the rim. The spokes thus fastened cannot become loose in the rim and the difficulty occasioned by spokes slipping in the clamps

Improved Metal Wheel.

while being riveted is overcome. An even perfect tension, it is said, is secured by this method of fastening which holds the wheel true and round. At the hub end the spoke is fastened by the insertion of the bent ends into the casing. These are held in position by caps over the hub tube so that no riveting is required at either end of the spoke. The wheels are designed for baby carriages and toy vehicles and are supplied with rubber tires.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal.
Linseed, State and Western, raw	.44 @45
City, Boiled	.46 @47
City, Raw	.45 @..
Raw, Calcutta, in bbls	.70 @..
Lard, Extra Prime, Winter	.74 @77
Extra No. 1	.53 @56
No. 1	.49 @52
Cotton-seed, Crude, f.o.b. mill	.25 @26
Summer Yellow, prime	.35½@36
Summer White	@38
Yellow Winter	@41
Sperm, Crude	.59 @60
Natural Winter	.71 @74
Bleached Winter	.74 @76
Bleached Winter, Extra	@..
Tallow, Prime	.59 @60
Whale, Crude	.35 @36
Natural Winter	.46 @48
Bleached Winter	.49 @51
Extra Bleached Winter	.52 @54
Menhaden, Brown, Strained	.41 @42
Light Strained	.41 @42
Northern	@..
Southern	.37 @..

	℔ lb
Cocoanut, Ceylon	7¾@ 8
Cochin	8¾@ 9
Cod, Domestic, Prime	.42 @44
Newfoundland	.44 @46
Red, Elaine	.46 @49
Saponified	6¾@ 7
Olive, Yellow	.75 @80
Neatsfoot, Prime	.55 @58
Palm, Lagos	6½@ 6¾

Mineral Oils—

	℔ gal.
Black, 29 gravity, 25@30 cold test	.13 @13½
29 gravity, 15 cold test	13½@14
Summer	12½@13
Cylinder, light, filtered	20½@21
Dark, filtered	.18 @19
Paraffine, 903-907 sp. gravity	14½@15
903 sp. gravity	13½@14
883 sp. gravity	.11 @11½
Red	13½@14

Miscellaneous—

Barytes:	
White, Foreign	℔ ton $18.50@20.50
Amer. floated	℔ ton 19.00@20.00
Off color	℔ ton 13.00@16.50
Chalk, in bulk	℔ ton 3.00@ 3.25
In bbls	℔ 100 lb ....@ .35
China Clay, Imported	℔ ton 11.00@17.50
Cobalt, Oxide	℔ 100 lb 2.50@ 2.60
Whiting, Commercial	℔ 100 lb .43@ .52
Gilders	℔ 100 lb .55@ .65
Ex. Gilders	℔ 100 lb .60@ .65

Putty, Commercial—℔ 100 lb

In bladders	$1.70 @1.85
In bbls. or tubs	1.20 @1.45
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—℔ gal.

In Oil bbls	.48 @48½
In machine bbls	48½@49

Glue—

	℔ lb
Cabinet	.12 @15
Common Bone	7½@ 9
Extra White	.18 @24
Foot Stock, White	.12 @14
Foot Stock, Brown	9 @11
German Hide	.12 @18
French	.10 @40
Irish	.13 @16
Low Grade	.10 @12
Medium White	.14 @17

Gum Shellac—

	℔ lb
Bleached, Commercial	.30 @31
Bone Dry	.38 @40
Button	.40 @50
Diamond I	.51 @52
Fine Orange	.31 @35
A. C. Garnet	.41 @45
G. A. L.	.25 @26
Kala Button	.20 @22
D. C.	.54 @56
Octagon B	.51 @52
T. N.	.27 @29
V. S. O.	.53 @55

Colors in Oil—

	℔ lb
Black, Lampblack	.12 @14
Blue, Chinese	.36 @46
Blue, Prussian	.32 @36
Blue, Ultramarine	.13 @16
Brown, Vandyke	.11 @14
Green, Chrome	.12 @16
Green, Paris	@24
Sienna, Raw	.12 @15
Sienna, Burnt	.12 @15
Umber, Raw	.11 @14
Umber, Burnt	.11 @14

White Lead, Zinc, &c.—

	℔ lb
Lead, English white, in Oil	10⅞@10⅝
Lead, American White:	
Lots of 500 lb or over, in Oil	@ 7
Lots less than 500 lb, in Oil	@ 7½
Lead, White, in oil, 25 lb tin pails, add to keg price	@ ⅛
Lead, White, in oil, 12½ lb tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price	@ 1⅛

Lead, American. Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.

	℔ lb
Zinc, American, dry	5⅝@ 5½
Zinc, French:	
Antwerp, Red Seal, dry	8¾
Antwerp, Green Seal, dry	10¾
Paris, Red Seal, dry	9¼
Paris, Green Seal, dry	.11

Zinc, V. M. French, in Poppy Oil:

Green Seal:	
Lots of 1 ton and over	13¼@13⅝
Lots of less than 1 ton	13⅜@13⅞
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	11⅞@12⅜
Lots of less than 1 ton	12⅛@12⅝

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1⅞; 25 bbls., 2⅜; 50 bbls., 4⅞.

Dry Colors—

	℔ lb
Black, Carbon	6¼@10
Black Drop, American	3½@ 8
Black Drop, English	5 @15
Black, Ivory	.16 @20
Lamp, commercial	4 @ 6
Blue, Celestial	4 @ 6
Blue, Chinese	.30 @33
Blue, Prussian	.28 @32
Blue, Ultramarine	3½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.10@3.25
Green, Chrome, ordinary	3½@ 5
Green, Chrome, pure	.17 @25
Lead, Red, bbls., ¼ bbls., kegs.	@ 7¼
Litharge, bbls., ½ bbls., kegs.	@ 7¼
Ocher, American	℔ ton $8.50@16.00
American Golden	2½@ 3¼
French	1¼@ 2
Foreign Golden	3 @ 4
Orange Mineral, English	.10 @12
French	11¾@12
German	.10 @12
American	8¾@ 9
Red, Indian, English	4½@ 6
American	3 @ 3½
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	℔ 100 lb $0.50@1.25
English	℔ 100 lb $1.15@1.60
Sienna, Italian, Burnt and Powdered	3 @ 9
Italian, Raw, Powdered	3 @ 7
American, Raw	1½@ 2
American Burnt and Pow'd.	1½@ 2
Talc, French	℔ ton $18.00@25.00
American	℔ ton 15.00@25.00
Terra Alba, French	℔ 100 lb .90@ 1.00
English	℔ 100 lb .80@ 1.00
American	℔ 100 lb, No. 1, .75@ .80
American	℔ 100 lb, No. 2, .60@ .65
Umber, Turkey, Burnt & Pow.	2 @ 3½
Turkey, Raw and Powdered	2¼@ 3½
Burnt, American	1½@ 2
Raw, American	1½@ 2
Yellow Chrome, Pure	.12 @14
Vermilion, American Lead	7 @25
Quicksilver, bulk	.65 @..
Quicksilver, bags	@66
English, Imported	.65 @70
Chinese	$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic.....33⅓%
Norton's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

Anvils—American—

Eagle Anvils.....₱ lb @8¼¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....₱ lb 9½@9¾¢

Imported—

Peter Wright & Sons, ₱ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Livingston Nail Co.....33⅓%

Augers and Bits—

Com. Double Spur.....75@80%
Jennings' Pats., Bright.65&10@70%
Black Lip or Blued...65@65&5%
Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40&10%
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings .....25&10&2½%
L'Hommedieu Car Bits.....12½%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....50%

Bit Stock Drills—

See *Drills, Twist.*

Expansive Bits—

Clark's Pattern, No. 1, ₱ doz. $28; No. 2, $18.....60&10%
Ford's, Clark's Pattern.....66⅔&5%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's 60%

Gimlet Bits—

Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—

Bonney Pat., per doz..$6.50@7.00
Ames .....25&10%
Universal 20%

Ship Augers and Bits—

Ship Augers.....40&10%
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' .....33⅓&7½%
Snell's .....%

Awl Hafts—See *Handles Mechanics' Tool.*

Awls—

Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. $1@$1¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

Single Bit, base weights: Per doz.
First Quality.....$4.75@5.00
Second Quality.....$4.25@4.50
Double Bit, base weights:
First Quality.....$7.00@7.50
Second Quality.....$6.50@6.75

Axle Grease—

See *Grease, Axle*

Axles—Iron or Steel

Concord, Loose Collar..4½@5 ¢
Concord, Solid Collar..5¼@5½¢
No. 1 Common, Loose....3¾@4¼¢
No. 1½ Com., New Style..4½@5 ¢
No. 2 Solid Collar.....4½@5 ¢
Half Patent:
Nos. 7, 8, 11 and 12..65@65&10%
Nos. 13 to 14.....65@65&10%
Nos. 15 to 18.....70@70&10%
Nos. 19 to 22.....70@70&10%

Boxes, Axle—

Common and Concord, not turned lb., 5@6¢
Common and Concord, turned. lb., 6@7¢
Half Patent.....lb., 9½@10¢

Bait—Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances—Sash—

Caldwell new list.....50%
Pullman .....50&10&60%

Spring—

Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb.... per lb., —@2½@2¾¢

Towel—

No. 10 Ideal, Nickel Plate..₱ gro. $8.50

Beams, Scale—

Scale Beams.....40%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned.....₱ doz. $1.50

Beaters, Egg—

Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.
Turner & Seymour Mfg. Co.:
T. & S. Dover.....$6.50

Bellows—

Blacksmith, Standard List..
Split Leather.....60&10@65%
Grain Leather.....50@50&10%

Hand—

Inch..	6	7	8	9	10
Doz..	$5.00	5.50	6.00	6.50	7.50

Molders—

Inch..	10	12	14	16
Doz..	$7.50	9.00	12.00	15.00

Net Prices.

Bells—Cow—

Ordinary Goods..75&5@75&10&5%
High grade.....70&10@75%
Jersey .....75&10%
Texas Star.....50%

Door—

Home, R. & E. Mfg. Co.'s.....55&10%

Hand—

Polished, Brass.....50@50&10%
White Metal.....50@50&5%
Nickel Plated.....50%
Swiss 50%
Coue's Globe Hand Bells.....33⅓@35%

Miscellaneous—

Farm Bells.....lb., 2¼@2½¢
Church and School....60@60&5%

Belting—Leather—

Extra Heavy, Short Lap..60&5%
Regular Short Lap....60&10&5%
Standard .....70&5%
Light Standard.....75%
Cut Leather Lacing.....40&10%
Leather Lacing Sides, per sq. ft. 2½½¢

Rubber—

Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....70@70&5%
Extra .....60&5@60&10%
High Grade.....50&5@50&10%

Bench Stops—

See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters 20%

Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes.....50%
Tubes 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—

Common Wooden.....75%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined.....40%
Embossed 50%

Boards, Wash—

See *Washboards.*

Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

Bolts—

Carriage, Machine, &c.—

Common Carriage (cut thread):
⅜ × 6 and smaller..70&5@—%
Larger and longer.....65@—%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends.....65&5@—%
Machine (Cut Thread):
⅜ × 4 and smaller..70&7½@—%
Larger and longer...65&5@—%

Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knob:

Inch....	3	4	5	6	8
Per doz.	$1.20	.35	.45	.60	.80

Cast Iron Spring Foot, Jap'd:

Inch	6	8	10
Per doz.	$1.20	1.50	2.25

Cast Iron Chain, Flat, Japanned:

Inch	6	8	10
Per doz.	$1.00	1.40	1.65

Cast Iron Flat Shutter, Jap'd., Brass Knobs:

Inch	6	8	10
Per doz.	$0.75	.95	1.25

Wrought Barrel Japd..80@80&10%
Barrel Bronzed.....60&10%
Spring .....70&10@70&10&10%
Shutter .....50&5@50&10&5%
Square Neck.....75@75&10%
Square .....70&10&10%
Ives' Patent Door.....55%
Ives' Wrought Metal.....45%

Expansion—

Richards Mfg. Co.....50&10%

Plow and Stove—

Plow .....65&5@—%
Stove .....85@85&5%

Tire—

Common Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99.....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Bung—

Borers Bung, Ring, with Handle:

Inch.....	1¼	1½	1¾	2
Per doz....	$4.80	5.60	6.40	8.00
Inch	2¼	2½		
Per doz.....	$8.65	11.50		

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection 40%
Seavey 45%

Braces—

Common Ball, American....$1.50
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat..60&10%

Brackets—

Wrought Steel.....70&10@75&10%
Bradley Metal Clasp..80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets .....70&10%
Taplin Victor Handy Egg Beater Bracket .....₱ doz. $1.50

Bright Wire Goods—

See *Wire and Wire Goods.*

Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

Buckets, Galvanized—

M'f'gr's list, price per gross.

Quart..	*10*	*12*	*14*	
Water, Reg....	25.35	28.00	32.00	*10&5%*
Water, Hvy....	45.35	48.00	52.00	
Fire, Rd. Btm.	32.00	34.65	38.65	
Well	37.35	41.35	45.35	

Bull Rings—See *Rings, Bull*

Butts—Brass—

Wrought, High List, Oct. 26, '06..55%
Cast Brass, Tiebout's.....40%

Cast Iron—

Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70&10@75%
Parliament Butts.....70@70&5%

Wrought Steel—

Bright.
Light Narrow, Light Reversible .....70&5%
Reversible and Broad..70&5%
Loose Joint, Narrow, Light Inside Blind, &c.....70%
Back Flaps, Table Chest..65% Japanned.
Light Narrow, Loose Pin, 40&5%
Light Narrow, Ball Tip..60%
Broad .....40&5%
Steeple Tipped.....70%
Ball Tipped.....70%

Extra 10@—

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze; Series 700, 800..30%
Hendryx Enameled..... 35%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong, per lb., 4¼@4¾¢
Sharp, 1 prong, per lb., 4⅜@5¼¢
Burke's, Blunt 4c@4¼¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4c@4¼¢; Sharp 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See *Openers, Can.*

Caps, Percussion—

Eley's E. B..... 52@55¢
G. D.....*per M* 34@35¢
F. L.....*per M* 40@42¢
G. E.....*per M* 48@50¢
Musket.....*per M* 62@63¢

Primers—

Berdan Primers, $2 per M..20&5%
Primer Shells and Bullets..15&10%
All other primers per M.$1.52@1.60

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:

32 C. F., $5.50..... 10&5%
38 C. F., $7.00..... 10&5%
22 cal. Rim, $1.50..... 10&5%
32 cal. Rim, $2.75..... 10&5%
B. B. Caps, Con. Ball, Swgd.$1.90
B. B. Caps, Round Ball....$1.49
Central Fire..... 25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting..... 50%
Rim Fire, Military..... 15&5%

Casters—

Bed..... 65&10%
Plate..... 60&5%
Philadelphia..... 70&10%
Acme, Ball Bearing..... 35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem..... 20%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list..40&10%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Proof Coil—

American Coil, Straight Link:

3-16	¼	5-16	⅜	7-16	½	9-16
$8.77	6.17	5.02	4.57	4.37	4.27	4.22

⅝ ¾ ⅞ to 1 1⅛ to 1¼ inch.
$4.17 4.07 4.02 4.12

In cask lots, deduct 25¢.

German Coil:
6-0 to 1.....70&5@70&10%
2 and 3..50&10&10@60&10&10&5%
4, 5 and 6.....50&10@50&10&5%

Halter—

Halter Chains.....60@60&5%
German Pattern Halter Chains, list July 24, '97.....60&10&5%
Covert Mfg. Co.
Halter ..... 35&5%

Cow Ties—

See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring..$28.00
6½—6-2, Straight, with ring..$29.00
6½—8-2, Straight, with ring..$32.00
6½—10-2, Str'ght, with ring..$37.00

NOTE.—Add 2c per pair for Hooks. Twist Traces; add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.

Eastern Standard Traces, Wagon Chain, &c..60&10@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron..... 60&10%
Brass..... 60%
Safety and Plumbers' Chain, 60&10%
Gal. Pump Chain....*lb*..4½@4¾%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain..... 50%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft..... $1.25@$3.00
Sash Ribbon Attachments, per set..8¢

Chalk—(From Jobbers.)

Carpenters' Blue....*gro.*, 50@55¢
Carpenters' Red.....*gro.*, 45@50¢
Carpenters' White...*gro.*, 40@45¢

Checks, Door—

Bardsley's 45%
Pullman, per gro..... $54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 50%
Youths' Chests, with Tools..... 25%
Gentlemen's Chests, with Tools..25%
Farmers', Carpenters,' etc., Chests, with Tools..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

Chisels—

Socket Framing and Firmer

Standard List.....75&10@—%
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White Co.....30@30&5%

Tanged—

Tanged Firmers.....30&5@35%
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181, 25%
L. & I. J. White Co..... 25&5%

Cold— *lb.*

Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary... 9@10¢

Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat., each $8.00..... 35&5%
Empire 25%
Blacksmiths' 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Patent Chucks:
Independent Lathe Chucks..... 35%
Universal, Reversible Jaws..... 35%
Combination, Reversible Jaws....35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat., 25%; Positive Drive..... 40%
Planer Chucks..... 20%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combination, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal, No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%

Clamps—

Adjustable, Hammers'.....20@20&5%
Carriage Makers', P., S. & W. Co. ..... 50&10%
Resly, Parallel..... 33⅓&10%
Myers' Hay Rack..... 45%
Lineman's Swedish Neverturn..... 65%
Wood Workers, Hammers'.....40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse, each..... $6.75
Stewart's Patent Sheep Shearing Machine, each..... $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

Clips, Axle—

Regular Styles, list July 1, '05, 80&80&10%

Cloth and Netting, Wire

—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c..... 70@—%
Compression Bibbs..60&10@—%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list..... 40%
Leather, Walter B. Stevens & Son's list 40%

Compasses, Dividers, &c.

Ordinary Goods.....70&10@75%
Wm. Schollhorn Co.:
Excelsior Dividers..... 60%
Lodi Dividers..... 70&10%

Conductor Pipe,—

L. C. L. to Dealers:

Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*
Eastern:		
70%	50&17½%	45%
Central:		
70&5%	55%	45%
Western and Southern:		
65&10%	50&2½%	40&5%
So. Western		
65&5%	45&5%	40&2½%

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.

See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:

Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled..... 10%
Agate Lined..... 10%

Coopers' Tools—

See *Tools, Coopers'.*

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair and heavier, 30@33¢; lighter than 3 lb. to pair.....32@35¢

Cord— Sash—

Braided, Drab.....*lb*. 35¢
Braided, White, Com., Nos. 8 to 12, 2½¢; No. 7, 2¾¢; No. 6, 2⅞¢. In lots of 12 doz. or over, 1 cent less per pound.
Cable Laid Italian, lb., No. 18..37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India.....*lb.*, 11@11½¢
Cotton Sash Cord, Tw'ted.18@20¢
Patent Russia.....*lb*...20¢
Cable Laid Russia.....*lb*...21¢
India Hemp, Br'd'd.....*lb*...21¢
India Hemp, Twisted..*lb*.13@14¢
Patent India, Twisted...*lb*...17¢
Pearl Braided, cotton, No. 6, ℔ lb, 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½¢; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10..... ℔ lb 23 ¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per doz.10¢
Samson, Nos. 8 to 12: 15%
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White....℔ lb 40¢
Massachusetts, Drab.....℔ lb 45¢
Phoenix, White, Nos. 8 to 12, 27¢;
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

List July 10, 1906.....90@—%
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 85&10%

Cradles—

Grain.....40&12½%

Crayons—

White Round Crayons, Cases, 100 gro., $6.50@$7.50 at factory, but lower prices made by jobbers
Zelnicker's Lumber. ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.00
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $16.25; Indelibles $18.75
Genuine Soapstone, Metal Workers', 5 in. x ¾ in. Round, $2.50; 5 in. x ¾ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16..... $3.00

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, $5.50; Light $5.00

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden..... 50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'n Knives, 1847.℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60%
B. Mfg. Co..... 40%
Woodward 50%

Meat and Food—

American 30%

Nos.	401	402	403	404	405	406	407
Each	$5	$7	$10	$12	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

No. 202, $1.50..... 25@25&7½%
No. 202, $1.50..... 40&7½%
P., S. & W. Co.:
Dixon's ..... ℔ doz. 33⅓%

Nos...	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal ..... 40@40&5%
Hales ..... 60&10&5%
Little Giant..... ....℔ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

New Triumph No. 605, ℔ doz, $24.00, 40&10%
Russwin Food. No. 1, $24.00; No. 2, $27.00 ..... 45&10&10%
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

Tobacco—

All Iron, Cheap..*doz.* $4.25@$4.50
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

Diggers, Post Hole, &c.—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. $8.75
Split Handle Post Hole Diggers, ℔ doz., $7.75
Hercules Pattern, ℔ doz..... $10.00
Kohler's, ℔ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Post Hole Diggers, ℔ doz., $24.00..... 60%

Dividers—See *Compasses.*

Drawing Knives—

See *Knives, Drawing.*

Dressers, Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmiths' Common Drilling Machines..... $1.50@$1.75
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved 40%
Ratchet, No. 912..... 40%
Ratchet, Celebrated..... 40%
Ratchet, Whitney's, P., S. & W.. 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Bit Stock.....60&10&10@70%
Taper and Straight Shank.... 60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits.....30%
Champion 50%
Disston's 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto..... 65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co.: Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 50%; No. 7540, 40&10%

Eave Trough, Galvanized—

Territory. Galv. Steel.	*Charcoal Iron.*	*L. C. L. Galvanized Copper. 14, 16&20 oz.*
Eastern:		
75&5%	60&10%	45%
Central:		
75&10%	65%	45%
Western and Southern:		
75%	60&5%	40&5%
So. Western:		
70&10%	55&7½%	42½%

Terms.—2% for cash. Factory shipments generally delivered.

See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I. Standard Gauge..... 80%
No. 26..... 50%
No. 24..... 25%
No. 22..... 10%
Copper.....50&10%

Elbows, Stove Pipe—

Edwards, Standard Blue.....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, one piece.....40&10%

Emery, Turkish—

	4 to 4½:	*5 to 220: Flour.*	
Kegs.....*lb.*	5 ¢	5½¢	3½¢
½ Kegs.....*lb.*	5¼¢	5¾¢	3¾¢
¼ Kegs.....*lb.*	5½¢	6 ¢	4 ¢
10-lb. cans, 10 in case....	6½¢	7 ¢	6 ¢
10-lb. cans, less than 10.....	10 ¢	10 ¢	8 ¢
Less quantity..	10 ¢	10 ¢	8 ¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10%
Upson's Patent.....40%

Cord and Weight—
Ives and Titan.....33⅓%

Faucets—
Cork Lined.....50&10@60%
Metallic Key, Leather Lined..
60&10@70%
Red Cedar.....40&5@40&10&5%
Petroleum .....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined...50%
John Sommer's Reliable Cork Lined..
50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.....75&10@80%
Lower Grade...75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—
Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	15	17	19	21
Per doz.	$3.60	3.85	4.15	4.65

P., S. & W. Co.....25%
Reading Hardware Co.....60%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Wood Saw—
White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	1	2	3	4	6
Each	$1.25	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp $2.75
Cotton 3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
} 10&5%

Gates, Molasses and Oil—
Stebbins' Pattern.....75@80%

Gauges—
Marking, Mortise, &c..50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.80; 2, $2.60
Spike, Wood Handled, No. 1, $3.80; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....65@65&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush..
25&10@50%
Elwell's 10%

Grease, Axle—
Common Grade....gro. $6.00@6.50
Dixon's Everlasting, 10-lb pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....60&5@60&10%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%

Hammers—Handled Hammers—
Heller's Machinists'...55&10@55&10&5%
Heller's Farriers'.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....50%
Farriers' .....40&10&5%
Riveting 50%
Machinists', revised list.....66⅔&5%
Blacksmiths' .....50&5%
Fayette R. Plumb:
A, E, Nail.....40&2½@40&12½%
Eng. and B, S, Hand.50&10&5@60&5%
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢..80&5@—%
3 to 5 lb., per lb., 40¢..80&5@—%
Over 5 lb., per lb., 30¢.....
80&10&5@—%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%

Cross-Cut Saw Handles—
Atkins' 40%
Champion 50%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro. $3.00@$3.50
Brad Awl.....gro. $1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@ $1.95; Hickory....$1.60@$1.75
Socket Framing, Hickory, $1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.....
℔ gro. $0.85@$1.50
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 in., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $3.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
} 30%

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.
Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50%
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½%
Roller Bearing.....70&2½%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy. No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion $2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown.....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2.70%
Anti-Friction 60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13,$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22.—50&5%
Trolley B, D No. 17, $1.25; F, D, No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 46....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%
} Extra 10% often given.

Hangers— Garment—
Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled, $27.00; 1 pair Flat Gun Metal, $12.00; 1 pair Flat Black Enameled, $7.50; 1 pair Wood Clamp, $13.50; Skirt Hangers, Folding, per gro., $21.00; Coat Hangers, Folding, per gro., $8.00; Garment Hanger Rods, Round Nickeled, per gro., $10.50; Garment Hanger Loops, Round Nickeled, per gro.....$10.50
Victor Folding.....℔ gro. $9.60

Gate—
Myers' Patent Gate Hangers, ℔ doz. net $4.50

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

Hatchets—
Regular list, first qual..40&2½@—
Second quality.....50&5@—

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ℔ doz., $0.75.....20%

Hinges—
Blind and Shutter Hinges
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair	$0.75	1.35	2.70

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	1	1½	2
Doz. pair	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire 65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with L't'chs.	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	.35

New England:
With Latch.....doz. ....@$2.00
Without Latch...doz. ....@$1.60
Reversible Self-Closing:
With Latch.....doz. ....@$1.75
Without Latch...doz. ....@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz. $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50%

Spring Hinges—
Holdback, Cast Iron...$6.75@$7.00
Non-Holdback, Cast Iron $6.50@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot, Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor..50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, ℔ gr., No. 14, $9.00; No. 18, $25.00
Columbia, Adj., No. 7, ℔ gr. $12.00
Columbian Hinges.....60&10%
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Lawson Mfg. Co. Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearing Floor Hinge 50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
} Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges..50&10%
Heavy Strap Hinges..60&5%
Light T Hinges.....50%
Heavy T Hinges.....40%
Extra Hvy. T Hinges.50&10%
Hinge Hasps.....33⅓%
Cor. Heavy Strap...60&5%
Cor. Ex. Heavy T...50&10%
} Extra 10&7½%

Screw Hook and Strap.
6 to 12 in..lb. 3½¢
14 to 20 in..lb. 3½¢
22 to 36 in..lb. 3½¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6½¢
⅝-inch.....lb. 7½¢
½-inch .....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross.

Inch	15	16	17	18
Galv. Open	$35	$39	$42	$46
Jap. Open	26	28	31	35
Galv. Funnel	43	48	52	56
Jap. Funnel	33	36	39	43

} 10&5%

Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Eye—
Scovil and Oval Pattern..... 60&10@60&10&10%
Grub, list Feb. 23, 1899..... 70&10&7½&10%

D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) 60%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe..... 75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱ doz. $5.25

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

Door—

Bardsley's, Iron, 40%; Brass and Bronze 25%
Empire 50%
Pullman 35%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip 50%
Superior 33⅓%

File and Tool—

Nicholson File Holders and File Handles .....33⅓@40%

Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $10.80; ₱ doz.....$1.25

Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs $1.25
Dash Rein Holder, ₱ doz. pairs..$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

Wire—

Belt 80%
Wire C. & H. Hooks....75@—%
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

Wrought Iron—

Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton .....doz. $1.05@$1.25
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, best, all sizes, per doz.$3.00
Grass, common grades, all sizes, per doz.....$1.50
Whiffletree .....lb. 5%@6¢
Hooks and Eyes:
Brass .....60@60&10%
Malleable Iron.....70@70&10%
Coverdale Mfg. Co. Gate and Scuttle Hooks 40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder .....80&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition .....ft. 5@ 6¢
3 ply Guaranteed.....ft. 8@ 9¢
4 ply Guaranteed.....ft. 10@11¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 8@ 9¢
Fair Quality.....ft. 10@11¢

Irons— Sad—

From 4 to 10.....lb. 3¼@3½¢
B. B. Sad Irons.....lb. 3¼@3½¢
Mrs. Potts', cents per set:

	Nos. 50	55	60	65
Jap'd Tops	83	80	93	91
Tin'd Tops	88	85	98	95

New England Pressing..lb.3¾@4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner 60%

Pinking—

Pinking Irons.....doz.60¢

Irons, Soldering

See *Copiers.*

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport 50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Ladder—

Richards Mfg. Co., Ladder Jacks..50%

Kettles—

Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....75&5@75&10%
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's .....66⅔@70%
Watrous 16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge, per doz..$5.50@5.75
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

Miscellaneous—

Farriers' .....doz. $3.00@3.25
Wostenholm's .....₱ doz. $3.00@3.25

Knobs—

Base, 2¼-inch, Birch, or Maple, Rubber Tip.....gro. $1.25@$1.40
Carriage, Jap., all sizes..... gro. 40@45¢
Door, Mineral.....doz. 65@70¢
Door, Por. Jap'd.....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c.15%

Lacing, Leather—

See *Belting, Leather—*

Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P. S. & W.....40&10%
Reading 60%

Lanterns—Tubular—

Regular, No. 0.....doz. $4.35@4.50
Side Lift, No. 0.....doz. $4.60@4.75
Hinge Globe, No. 0. doz. $4.60@4.75
Other Styles.....40@40&10%

Bull's Eye Police—

3-inch .....$4.25@4.50

Latches— Thumb—

Roggin's Latches, with screw.. doz. 35@40¢

Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125 .....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—

Small.....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Leathers, Pump—

See *Pumps—*

Lifters, Transom—

R. & E.....10%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	$2.50	2.25	2.00
75 feet	$2.10	1.80	1.65

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50 .....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton.....20%
Shade Cord, Cotton or Linen....20%

Locks— Cabinet—

Cabinet Locks.....33⅓%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass .....75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock, 33⅓%.
Pullman Patent Ventilating Lock..35%
Reading Sash Locks.....40%

Machines—Boring—

Com. Upr't, without Augers, $2.00@2.25
Com. Angl'r, without Augers, $2.25@2.50
Swan's Improved.....40&10%
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

Corking—

Reisinger Invincible Hand Power.... ₱ doz. $48.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake 20%
Moore's Cyclone High Speed Chain Hoist 25%

Ice Cutting—

Chandler's 12½%

Washing

Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$57.00
Champion Rotary Banner No. 1	$57.00
Standard Champion No. 1	$50.00
Standard Perfection	$27.00
Cincinnati Square Western	$33.00
Uneeda American, Round	$33.60

Mallets—

Hickory .....45&5@50%
Lignumvitæ .....45&5@50%
Tinners' Hickory and Applewood .....doz. 45&5@50%

Mangers, Stable—

Swett Iron Works.....50%

Mats, Door—

Elastic Steel (W. G. Co.), new list.50%
Keystone Wire Matting Co.:
Keystone 50%
Ideal 50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

Motors, Water—

Divine's Red Devil.....30%
Lippincott's 30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest.....all sizes, $1.85@2.00
Cheap .....all sizes, $2.00@2.50
Better Grade..all sizes, $2.50@4.50

	12	*14*	*16*	*18-in.*
High Grade....	$3.50	4.75	5.00	5.25

Continental 60%
Great American.....70%
Great American Ball Bear'g, new list.70%
Quaker City.....70%
Pennsylvania 60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse .....40&5%
Pony .....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

Nails—

Wire Nails and Brads, Miscellaneous .....87½@87½&10%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Coleman	13	12	12	11	11	.....net
New Haven..	23	21	20	19	18	...40&5%
Livingston ..	19	18	17	16	16	.....10%

Western .....₱ lb. 8½¢
Jobbers' Special Brands..... per lb.9@10¢

Picture—

	1½	2	2½	3	in.
Brass H'd.	.45	.55	.60	.70	.. gro
Por. Head..	1.10	1.10	1.10	..	gro

Nippers—

See *Pliers and Nippers.*

Nuts—

	Off list.
Cold Punched:	
Square, Blank or Tapped	4.80¢
Hexagon, Blank or Tapped	5.10¢
Square, Bl'k, C., T. & R.	5.10¢
Hexagon, Bl'k, C., T. & R.	5.70¢
Hot Pressed:	
Square, Blank	5.10¢
Hexagon, Blank	5.70¢
Square, Tapped	5.20¢
Hexagon, Tapped	5.60¢

Oakum—

Best .....lb. 6¼¢
U. S. Navy.....lb., 6¢
Navy .....lb. 5¢
Plumbers' Spun Oakum..8¾@9¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Steel, Copper Plated.....75%
Chase or Paragon:
Brass and Copper.....50&10%
Zinc .....65&10%
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70&70&10%
Railroad Oilers, &c.....60&60&10%

Openers— Can— *Per doz.*

Sprague, Iron Handle....30@35¢
Sprague, Wood Handle...35@40¢
Sardine Scissors.....$1.75@$3.00
Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

Packing—

Asbestos Packing, Wick and Rope .....20@25¢

Rubber—

(Fair quality goods.)

Sheet, C. I.....11@12¢
Sheet, C. O. S.....11@12¢
Sheet, C. B. S.....12@13¢
Sheet, Pure Gum.....40@45¢
Sheet, Red.....40@50¢
Jenkins' '96, ₱ lb. 80¢.....25%

Miscellaneous—

American Packing...lb. 7@10 ¢
Cotton Packing.....lb. 16@25 ¢
Italian Packing.....lb. 9@12½¢
Jute .....lb. 4@ 4½¢
Russia Packing.....lb. 8@11 ¢

Pails, Water, Well, &c.—

See *Buckets.*

Pans— Dripping—

Standard List.....65&7½@70%
Edwards, Royal Blue.....65&7½%

Fry—

Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz.	$0.75	0.80	0.90	1.10	1.30

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz.	$1.75	2.25	2.80	3.15

Paper—Building Paper

Asbestos: lb.
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.3½@5¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....6¢
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....3@5¢
Per roll
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll .....48@58¢
Medium weight, 30 lbs. to roll. 56@70¢
Heavy weight, 40 lbs. to roll. 75@78¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....$54.50
Red Rope Roofing, 250 sq. ft. per roll.....$1.75

Tarred Paper—

1 ply (roll 400 sq. ft.), ton.... $34.00@$38.00
2 ply, roll 108 sq. ft.....65¢
3 ply, roll 108 sq. ft.....85¢
Slater's Felt (roll 500 sq. ft.) .80¢

Sand and Emery—

Flint Paper and Cloth.50&10@—%
Garnet Paper and Cloth....25%
Emery Paper and Cl'h..50&10@60%

Parers— Apple—

Goodell Co.:
Family Bay State.....₱ doz, $13.00
Improved Bay State.....₱ doz. $36.00
New Lightning.....₱ doz. $7.00
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bonanza Improved.....each $7.50
Dandy .....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger .....each $25.00

Livingston Nail Co.:
Daisy .....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table.....₱ doz. $6.20

Reading Hardware Co.:
Advance .....₱ doz. $4.00
Baldwin .....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

Potato—

Saratoga .....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

Picks and Mattocks—

List, Feb. 23, 1899.70&10@70&10@65%
Cronk's Handled Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $2.40.

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass .....50@50&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Standard, 2-6 in......60&10@—%
Extra Heavy, 2-6 in...70&10@—%
Fittings, Standard and Heavy, 75&10@—%

Pipe, Merchant—

	Consumers, Carloads. Steel. Blk.	Galv.	Iron. Blk.	Galv.
	%	%	%	%
⅛ & ¼ in...	64	48	57	41
⅜ in.....	66	52	59	41
½ in.....	68	56	61	49
¾ to 6 in....	72	62	66	56
7 to 12 in....	69	54	61	46

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:
First-class 82%
Second-class 85%

Pipe, Stove—

	Per 100 joints. C. L.	L. C. L.
Edwards' Nested:		
5 in., Standard Blue....	$6.25	$7.25
6 in., Standard Blue....	6.75	7.75
7 in., Standard Blue....	7.75	8.75
5 in., Royal Blue.....	7.00	8.00
6 in., Royal Blue.....	7.50	8.50
7 in., Royal Blue.....	8.50	9.50
Wheeling Corrugating Co.'s Nested:		
5 in., Uniform Color..	$6.15	$7.15
6 in., Uniform Color..	6.65	7.65
7 in., Uniform Color..	7.65	8.65

Planes and Plane Irons—

Wood Planes—
Bench, first qual......30@30&10%
Bench, second qual....40@40&10%
Molding .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union 60%

Iron Planes—
Chaplin's Iron Planes.....50&10%
Union 60%

Plane Irons—
Wood Bench Plane Irons, list Dec. 12, '06.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....⅌ doz. $8.00

Plates—
Felloe .....lb. 4@4¼¢

Pliers and Nippers—
Button Pliers....75&5@75&10&5%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.

Gas Pipe..	7	8	10	12-in.
	$2.00	$2.25	$2.75	$3.50

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's 60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W., Tinners' Cutting Nippers 40%
Wm. Schollhorn Co.:
Bernard, 35%; Elm City, 35%; Paragon, 50%; Lodi, 55%.
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Duplex.....38%
Woods' Extension.....33⅓%

Points, Glaziers'—
Bulk and 1-lb. papers...lb. 9½¢
¼-lb. papers.....lb. 10 ¢
½-lb. papers.....lb. 10½¢

Police Goods—
Manufacturers' Lists...25@25&5%
Tower's 25%

Polish—Metal, Etc—
Prestoline Liquid, No. 1 (¼ pt.), ⅌ doz., $3.00; No. 2 (1 qu.), $9.00 .....40%
Prestoline Paste.....60%

George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ⅌ doz. 50¢; ⅌ gro. $4.50; ½ lb boxes, ⅌ doz. $1.25; 1 lb boxes, ⅌ doz. $2.25.
U. S. Liquid, 8 oz. cans, ⅌ doz., $1.25.
Barkeepers' Friend Metal Polish, ⅌ doz., $1.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, ⅌ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ⅌ doz. 75¢
Black Jack Paste, ¾ lb cans, ⅌ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, ⅌ gr. $5.75.....10%
Dixon's Plumbago.....⅌ lb 8¢
Fireside .....⅌ gr. $2.50
Gem, ⅌ gr. $1.50.....10%
Japanese .....⅌ gr. $3.50
Jet Black.....⅌ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ⅌ doz. $1.50

Poppers, Corn—
1 qt. Square..doz.$0.88; gro.$8.75
1 qt. Round..doz.$1.00; gro.$10.00
1½ qt. Square.doz.$1.10; gro.$11.00
2 qt. Square..doz.$1.35; gro.$13.50

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled .....35&10%
Tinned .....30&10%

Powder—
In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
In Kegs:
12½-lb. kegs.....$3.50
25-lb. kegs.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk).....	$12.00	$15.00
Half Keg (12½ lb bulk)...	6.25	7.75
Quarter Keg (6¼ lb bulk).	3.25	4.00
Case 24 (1 lb cans bulk)..	14.00	17.00
Half case 12 (1 lb c. bk)..	7.25	8.75

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
Seal Presses—
Morrill's No. 1, ⅌ doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Nail—
Cyclops 50%
Miller's Falls, No. 3, ⅌ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ⅌ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant 50%
Staple Pullers, Utica and Davison 60%

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05

Hay Fork, Swivel or Solid Eye. doz., ¼ in., $1.25; 5 in., $1.55

Inch	2	2¼	2½
Hot House, doz...	$0.65	.85	1.20

Inch	1¼	1½	1¾	2
Screw, doz....	$0.16	.19	.25	.30
Inch	1¾	2	2¼	2½
Side, doz.....	$0.25	.40	.55	.60
Inch	1½	1¾	2	2½

Sash Pulleys—
Common Frame; Square or Round End, per doz, 1¾ and 2 in.....17@20¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in....20@21¢
Acme, No. 35, 1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ⅌ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in.....20½¢
No. 26 Trow, 1¾ in., 14½¢; 2 in., 16¾¢
Star, No. 26, 1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—
Cistern 60%
Pitcher Spout.....75&5@75&10%
Wood Pumps, Tubing, &c....50%
Barnes Dbl. Acting (low list)....40&5%
Barnes Pitcher Spout.....75&5%
Contractors' Rubber Diaphragm No. 2, R. & L. Block Co.....$16.00
Daisy Spray Pump.....⅌ doz. $6.50
Flint & Walling's, Fast Mail Hand, (low list).....50%
Flint & Walling's Fast Mail (low list) 50%
Flint & Walling's Tight Top Pitcher. 75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5%
Myers' Power Pumps.....40&5%
Myers' Spray Pumps.....40&5%

Pump Leathers—
Plunger and Valve Leathers—Per gro.:

No......	2	2½	3	3½	4
	$3.10	3.70	4.35	4.95	5.60

Cup Leathers—Per 100:

Inch.....	2½	3	3½	4
	$3.80	4.75	6.20	8.80

Punches—
Saddlers' or Drive, good..... doz. 50@75¢
Spring, single tube, good quality $1.75
Revolving (4 tubes)....doz.$3.60
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Belt and Ticket, Bernard, 35%; Paragon, 50%; Lodi.....55%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ⅌ doz., $1.44.....40%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron.... 2½@2¾¢
Sliding Door, Wrought Brass, 1½ in., lb., 36¢ 50%
Allith Mfg. Co.: Reliable Hanger Track 50%
Cronk's:
Double Braced Steel Rail..⅌ ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, ⅌ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ⅌ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ⅌ 100 ft. $3.45
O. N. T., ⅌ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....⅌ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ⅌ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ⅌ ft., 11¢.. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards' Mfg. Co.:
Common, 1 x 3-8 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ⅌ ft., No. 31, 9¢; No. 32, 11¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, ⅌ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ⅌ doz.....$1.00
Malleable Garden.....70&10%
Ideal Steel Garden, ⅌ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....⅌ doz. $3.15
Lawn Queen, 24-tooth....⅌ doz. $3.25
Paragon, 20-tooth.....⅌ doz. $2.70
Paragon, 24-tooth.....⅌ doz. $2.75
Steel Garden, 14-tooth....⅌ doz. $2.40
Malleable Garden, 14-tooth, ⅌ doz. $2.00@2.25

Rasps, Horse—
Disston's 75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard, 60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—
Liana Bo-rasic.....60%
Fox Razors, ⅌ doz., No. 42, $30.00; No. 44, $20.00; No. 82, Platina, $25.00. } 33⅓%
Red Devil.....65%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 18, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 28 PN.....20%
2904 P, 33¼%; 2904 PN, 33¼%; 0024 N, 33¼%; 02904 N, 33¼%; 002904 PN, 33¼%; 802 N, 33¼%.....20%
986 PN, 2904 N, 974 PN.....28%
5009 PN, 5009 N.....20%
Competitor 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed 66⅔%
White Porcelain Enamel....60%
Solid Brass or Bronze Metal..25%

Revolvers—
Single Action.....95¢@$1.00
Double Action, except 44 cal..$2.00
Double Action, 44 caliber....$2.00
Automatic $4.00
Hammerless $4.50

Riddles, Hardware Grade
16 in......per doz.$2.50@$2.75
17 in......per doz.$2.75@$3.00
18 in......per doz.$3.00@$3.25

Rings and Ringers—
Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.10	1.25	1.65 doz.

Hog Rings and Ringers—
Hill's Rings, gro. boxes....$4.25
Hill's Ringers, Gray Iron, doz..60¢
Hill's Ringers, Malleable Iron.. doz.80¢
Blair's Rings.....per gro.$3.00
Blair's Ringers.....per doz.75¢
Brown's Rings.....per gro.$3.25
Brown's Ringers....per doz.75¢

Rivets and Burrs—
Copper .....40&10@50%
Carriage, Coopers', Tinners, &c.:
Black .....70&10%
Metallic Tinned.....70%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

Rope—
Manila, 7-16 in. diam. and larger:
Pure .....lb., 13@13½¢
Sisal, 7-16 in. diam. and larger:
Pure .....lb., 9¼¢
Sisal, 7-16 in. diam. and larger:
No. 2 quality.....lb., 7¾@8¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed .....lb., 7¾@8¢
Pure .....lb., 9¼¢
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred:
Mixed .....lb., 7@7½¢
Pure .....lb., 8¢
Cotton Rope:
Best, ¼-in. and larger...18@20¢
*Medium, ¼-in. and larger.*16@17¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope:
Thread, No. 1, ¼-in. & up, lb., 8 to 8½¢
Thread, No. 2, ¼-in. & up, lb., 7½ to 8¢

Wire Rope—
Galvanized .....37½&2½%
Plain .....45&2½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

Rules
Boxwood .....60@60&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel .....60&10%
Lufkin's Lumber.....50&10%
Unson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—
See *Sets, Saw.*

Saw Tools—
See *Tools, Saw.*

Saws—

Atkins':
Circular 45%
Band ..... 50@50&10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cut 40%
Narrow Cross Cut 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames ..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth. 50%
Band, 2 to 18 in. wide 60%
Band, ¼ to 1¼ 60%
Crosscuts 45%
Narrow Crosscuts 50%
Mulay, Mill and Drag 50%
Framed Woodsaws 25%
Woodsaw Blades 25%
Woodsaw Rods, Tinned 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 0, 00, Combination 30%
Compass, Key Hole, &c 25%
Butcher Saws and Blades 30%
C. E. Jennings & Co.'s:
Back Saws 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws ..30%
Simonds':
Circular Saws 45%
Crescent Ground Cross Cut Saws ..30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws. 45%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c ..25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A ..25%
Disston's:
Concave Blades 25%
Keystone Blades 35%
Hack Saw Frames 30%
Simonds File Co 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades ..... 40&10%
Griffin's Hack Saw Frames ..35&5&10%
Griffin's Hack Saw Blades ..... 35&5&10%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades ..... 30&10&5%
Sterling Hack Saw Frames ..30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 ..10%
Victor Hack Saw Blades 20%
Victor Hack Saw Frames 40%

Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

Scales—

Family, Turnbull's ....50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs. ..... doz., $5.50
Two Platforms, ½ oz. to 8 lbs. ..... doz., $16.00
Union Platform, Plain $1.70@1.90
Union Platform, Stpd. $1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Grocers' Trip Scales 50%
The Standard Portables 40%
The Standard R. R. and Wagon ..... 50&10%

Scrapers—

Box, 1 Handle ..... doz. $2.00@2.25
Box, 2 Handle ..... doz. $2.50@2.60
Ship .... Light, $2.00; Heavy, $4.50
Chapin-Stephens Co., Box ...30@30&10%
Richards Mfg. Co., Foot 60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75
Bench, Wood ..... 20@20&10%
Hand, Wood ... 70&10@70&10&10%
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

Coach, Lag and Hand Rail—

Lag, Cone Point ..... 75&10&10%
Coach, Gimlet Point ... 75&10&5%
Hand Rail ..... 70&10@75%

Jack Screws—

Standard List ..... 70&10@75%
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

Machine—

Cut Thread, Iron, Brass or Bronze:
Flat Head or Round Head, 50@50&10%
Fillister Head ..... 40@40&10%
Rolled Thread, F. H. or R. H., Iron ..... 75&10%
F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%

Set and Cap—

Set (Iron) ..... 75&10&7½%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap ..... 70&10&7½%
Hex. Hd. Cap ..... 70&10&7½%
Rd. Hd. Cap ..... 50&7½%
Fillister Hd. Cap ..... 60&7½%

Wood—

List July 23, 1903.
Flat Head, Iron ..... 87½&5@.. %
Round Head, Iron ..... 85&5@.. %
Flat Head, Brass ..... 80&5@.. %
Round Head, Brass .. 77½&5@.. %
Flat Head, Bronze .... 75&5@.. %
Round Head, Bronze. 72½&5@.. %
Drive Screws ..... 87½&5@.. %

Scroll Saws—

See *Saws, Scroll.*

Scythes—

Per doz.

Grass, No. 1, Plain .... $6.25@6.75
Clipper, Bronzed Webb. $6.50@7.00
No. 3 Clipper, Pol'd Webb .. $6.75@7.25
No. 6 Clipper and Solid Steel, $7.00@7.50
Bush, Weed and Bramble, No. 2 $6.50@7.00
Grain, No. 1 ..... $8.25@8.75
Bronzed Webb, No. 1 .. $8.50@9.00
Nos. 3 and 4 Clipper, Grain .. $8.75@9.25
Solid Steel, No. 6 ..... $9.25@9.75

Seeders, Raisin—

Enterprise ..... 25@30%

Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 ..20&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz sets $9.00

Sets, Nail—

Octagon ..... gro. $3.50@3.75
Buck Bros. 27½%
Cannon's Diamond Point, ℔ gro. $12, 40&10%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. ..... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled Cup Pt. .... ℔ gro. $7.50

Rivet—

Regular list ..... 75@75&10%

Saw—

Atkin's:
Criterion 40%
Adjustable 40%
Disston's Star, Monarch and Triumph 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut $20.60
No. 5, Mill $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style $10.00
Special $16.25
Giant Royal Cross Cut ..... ℔ doz. $8.00
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $4.75

50%

Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s 75%

Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. $1.50
Mounted Kitchen Sand Stone, ℔ doz. $1.50
Natural Grit Carving Knife Hones, ℔ doz. $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. $1.50
Quick Edge Pocket Knife Hones, ℔ doz. $2.50

50%

Skate—

Smith & Hemenway Co., Eureka..50%

Shaves, Spoke—

Iron ..... doz. $1.10@1.25
Wood ..... doz. $1.75@2.25
Bailey's (Stanley R. & L. Co.) 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

Shears—

	7	8	9 in.	
Cast Iron..				
Best	*$16.00*	*18.00*	*20.00*	*gro.*
Good	*$13.00*	*15.00*	*17.00*	*gro.*
Cheap	*$5.00*	*6.00*	*7.00*	*gro.*

Straight Trimmers, &c.:
Best quality Jap .. 70@70&10%
Best quality, Nickel .. 60@60&10%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%

Tinners' Snips—

Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 40&10@50%
Forged Handles, Steel Blades, Berlin 55%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s 6¼ to 10 in. ..... 33⅓&7½%
Niagara Snips 40%
P. S. & W. Forged Handles, 25%; W. R. W. ..... 40&10%

Pruning Shears—

Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades 40%
P. S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand. 60&10%

Sheaves—Sliding Door—

Reading 40%
R. & E. list 15%

Sliding Shutter—

Reading list 40%
R. & E. list 10%

Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 65&10%
Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union, League, 12 and 12 gauge; Rival Grade 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%
Expert, 10, 12, 16 and 20 gauge, 33⅓&5%

Shells, Loaded—

Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Union Metallic Cartridge Co.:
New Club, Black Powders 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ..40&10&10%
Black Powder 40%

Shingles, Metal— Per Sq.

Edwards Mfg. Co.:	Painted.	Galv.
14 x 20	$4.25	$6.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:
Dixie, 14 x 20 in.... $4.25 $5.50
Dixie, 10 x 14 in.... 4.50 6.00
Dixie, 7 x 10 in.... 5.00 6.75

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron ..... per keg. $4.10
Steel ..... per keg. $3.85
Burden's, all sizes ..... ℔ keg $3.90

Shot—

25-lb. bag.
Drop, up to B $1.95
Drop, B and larger 2.20
Buck 2.20
Chilled 2.20
Dust 2.50

Shovels and Spades—

Association List, Nov. 15, 1902. 40%
Avery Stamping Co. 40%

Snow Shovels—

Long Handle ..... $3.25@$3.50
Wood and Mall. D. Handle, $3.75@$4.00

Sieves and Sifters—

Hunter's Imitation ..... gro. $9.50@10.00
Hunter's Genuine ..... per gro. $12.00@12.50

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. $39.00

Sieves, Seamless Metallic

	Per dozen.			
Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested .... doz. $0.90@0.95
Mesh 20, Nested .... doz. $1.00@1.05
Mesh 24, Nested .... doz. $1.30@1.40

Sinks, Cast Iron—

Painted, Standard list:
12 x 12 to 22 x 36 in 60%
20 x 40 to 24 x 50 in 50%
24 x 60 to 24 x 120 in 30%
Barnes' low list:
Up to and including 20 x 36 in.... 50%
20 x 40 to 24 x 50 in 45%

NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron ..... 70@75&10%
Steel ..... 40@45%

Slates, School—

Factory Shipments.
"D" Slates ..... 50@50&10%
Eureka, Unexcelled Noiseless .. 60&5 tens
Victor A, Noiseless .60&5 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German ..... 40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan 40%
Jockey 25%

Snaths—

Scythe ..... 55@60%

Snips, Tinners—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality ..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co.:
1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous

German Silver ..... 60@60&5%

Tinned Iron—

Teas ..... per gro. .50@55¢
Tables ..... per gro. $0.90@$1.00

Springs— Door—

Bardsley's Spring and Check 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman (Coil) 35%
Reliance (Coil) ..... 40&10%
Star (Coil) 30%
Torrey's Rod, 39 in. ..... ℔ doz. $1.10

Carriage, Wagon, &c.—

1¼ in. and Wider:	*Per 100 lb.*
Black	*$4.75@$5.00*
Half Bright	*$4.75@$5.00*
Bright	*$5.25@$5.50*

Painted Seat Springs:
1¼ x 2 x 26 ..... per pr. 49@52¢
1½ x 3 x 28 ..... per pr. 73@77¢

Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

Squares—

Nickel plated .. List Jan. 5, 1900.
Steel and Iron .. 75&10@80%
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Disston's Try Squares and Bevels, Rosewood Handle, 60&10%; Iron Stock and Bevel 15%

Squeezers, Lemon

Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... doz. $1.00
Good Grade ..... doz. $1.25
Tinned Iron ..... doz. $0.75@1.25
Iron, Porcelain Lined ... doz. $1.75

Staples—

Barbed Blind ..... lb. 6@6½¢
Electricians', Association list .. 80&10&10&10%
Fence Staples, Plain, $2.15; Galvanized $2.45
Poultry Netting Staples ..... per lb. 3½@3½¢

Steels, Butchers'—

Dick's 30%
Foster Bros. 30%

Steelyards— .... 30@30&10%

Stocks and Dies—

Blacksmiths' ..... 50@50&10%
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates 25%

Stoners, Cherry—

Enterprise ..... 25@30%

Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ℔ lb
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. .60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
India Oil Stones (entire list) 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 40%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks..40%
Hindostan No. 1, R'g'lar. ℔ lb 8¢
Hindostan No. 1, Small.. ℔ lb 10¢
Axe Stones (all kinds) .....
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 10¢
Sand Stone ..... 6¢

33⅓%

Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S.. ℔ gro. $12.00
Lamoille S. S..... ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.00
Green Mountain S. S. ℔ gro. $6.00
Extra Indian Pond S. S. ℔ gro. $7.50
No. 1 Indian Pond S. S. ℔ gro. $7.00
No. 2 Indian Pond S. S. ℔ gro. $4.50
Leader Red End S. S. ℔ gro. $4.50
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%
Electro (Artificial), ℔ gro., $12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00..... 50%
Morrill's, No. 2, $12.50..... 50%

Door—

Chapin-Stephens Co..... 50@50&10%

Plane—

Chapin-Stephens Co..... 20%

Straps— Box—

Cary's Universal, case lots.... 20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60@60&10%
Socket ..... doz. $1.66
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00..... 20%

Stuffers, Sausage—

Enterprise Mfg. Co..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

Sweepers, Carpet—

	℔ doz.
Bissell Carpet Sweeper Co.:	
Superba, Crotch Mahogany	$36.00
Triumph, Fancy Veneers	$33.00
Parlor Queen, Fig. Rosewood	$30.00
Elite, Hungarian Ash	$29.00
Am. Queen, Fig. Mahogany	$27.00
Ideal, Bird's-Eye Maple	$25.00
Grand Rapids, Nickel, Japan	$24.00; $22.00
Standard, Nickel, $22.00; Japan	$20.00
Crown Jewel, Nickel, $21.00; Jap.	$19.00
Crystal, Glass Top	$36.00
Grand, 17 in. wide	$36.00
Club, 24 in. wide	$54.00
Hall, 28 in. wide	$60.00

NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five dozen lots.

Tacks, Finishing Nails, &c.

American Carpet Tacks... 90&25%
American Cut Tacks..... 90&25%
Swedes' Cut Tacks..... 90&25%
Swedes' Upholsterers'.... 90&35%
Gimp Tacks..... 90&35%
Lace Tacks..... 90&35%
Trimmers' Tacks..... 90&25%
Looking Glass Tacks..... 65%
Bill Posters' and Railroad Tacks, 90&40%
Hungarian Nails..... 80&10%
Finishing Nails..... 70%
Trunk and Clout Nails..... 80%

NOTE.—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks..... 90&10@90&10&10&5%
See also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.: Gal.	Gasoline	Oil
30	$2.75	$3.00
60	$3.50	$4.00
120	$5.00	$5.75

Tapes, Measuring—

American Asses' Skin ..60@—%
Patent Leather..... 25@50&5%
Steel ..... 33 1-3&5%
Chesterman's ..... 25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin..... 40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin..... 40&10@60%
Metallic ..... 30@30&5%
Patent Bend, Leather.... 25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $2.75@$3.00

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c..... 30@33⅓%

Ties, Bale—Steel Wire—

Single Loop..... 80&10&5%
Monitor, Cross Head, &c. 70&2½%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White..... 20@20&5%

Haying—

Myers' Hay Tools..... 45%

Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

Saw—

Atkins' Cross Cut Saw Tools.... 35&5%
Simonds' Improved..... 33⅓%
Simonds' Crescent..... 25%

Ship—

L. & I. J. White..... 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro.... $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida... 75@75&10&5%
Newhouse ..... 40@40&5%
Hawley & Norton..... 65%
Victor ..... 75@75&10%
Oneida Community Jump..... 50%
Hector ..... 75@75&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 12¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ℔ doz., $13.25..$11.50 doz.
No. 3, Rat, ℔ doz., $6.50... $5.75 doz.
No. 3½, Rat, ℔ doz., $5.25. $4.70 doz.
No. 4, Mouse, ℔ doz., $3.85. $3.00 doz.
No. 5, Mouse, ℔ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ℔ doz....$0.60
Out o' Sight, Rat, ℔ doz..... 1.25
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... 1.00
Wood Choker, Rat, ℔ doz. holes. .12
Premier Tin Choker, 5 hole, ℔ doz. traps..... .75

Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Woodrough & McParlin, Plastering. 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz. $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks..... ℔ doz. $18.50

Tubs, Wash—

M'f'gr's list, price per gross.

No.	0	1	2	3
Galvanized.	$67	$79	$89	$99 10%

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ½-lb. Balls. 23@25¢
No. 12, ¼ and ½-lb. Bal s. 21@23¢
No. 18, ¼ and ½-lb. Balls. 18@20¢
No. 24, ¼ and ½ -lb. Balls. 17½@19½¢
No. 36, ¼ and ½-lb. Balls. 17@19¢
Chalk Line, Cotton ½-lb. Balls ..... 26@31¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz..... 11@19¢
Cotton Wrapping, 5 Balls to lb., according to quality... 15½@23¢
American 2-Ply Hemp, ¼ and ½-lb. Balls..... 14½@15½¢
American 3-Ply Hemp. 1-lb. Balls ..... 15½@16½¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine). 10½@11½¢
India 3-Ply Hemp, 1-lb. Balls 10½@11½¢
India 3-Ply Hemp, 1½-lb. Balls. 10@11¢
2, 3, 4 and 5-Ply Jute, ½-lb. Balls ..... 13½@14½¢
Mason Line, Linen, ½-lb. Bls. 47¢
No. 264 Mattress, ¼ and ½-lb. Balls, according to quality, 30@60¢
Wool, 3 to 6 ply....B 9¢; A 10¢

Vises—

Solid Box..... 50@50&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co..... 40%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel..... 25%
Star, Solid Jaw..... 40%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher 40%
Perfect, 15%; Lightning Grip..... 15%
Merrill's 20%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island 25%
Snediker's X. L..... 33⅓%
Stephens' 33⅓%

Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ℔ doz.... $4.50
Reading 60%

Wood Workers—

Fulton Mach. & Vise Co.:
Reed 25%
Star 40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect..... 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

Wads—*Price per M.*

B. E., 11 up..... 60¢	
B. E., 9 and 10..... 70¢	
B. E., 8..... 80¢	
B. E., 7..... 80¢	
P. E., 11 up..... $1.00	*Dis. 15%*
P. E., 9 and 10..... 1.25	
P. E., 8..... 1.50	
P. E., 7..... 1.50	

Ely's B. E., 11 and larger. $1.70@1.75
Ely's P. E., 12 to 20.... $3.00@3.25

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled ..... 45&10%
Ground ..... 50&5%
Plain or Unground..... 60%
Country Hollow Ware, per 100 lbs. $3.00
White Enameled Ware:
Maslin Kettles..... 65&10%
Covered Wares:
Tinned and Turned..... 35&10%
Enameled ..... 45&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware..... 33⅓%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled..40&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch..	6	7	8	9
Each	*45¢*	*50¢*	*55¢*	*65¢*

Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles..... 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles..... 60%
Solid Steel Spiders and Griddles. 65&5%
Solid Steel Kettles..... 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame. $4.05
Red Star, family size, stationary protector $4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector..... $3.55
Cable Cross, family size, stationary protector..... $3.60
Single Zinc Surface:
Naiad, family size, open back, perforated $3.00
Single Saginaw Globe..... $2.85
Brass Surface:
Brass King, Single Surface, open back $4.05
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.60
Glass Surface:
Glass King, Single Surface, open back $3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back..... $3.95

Washers—Leather, Axle—

Solid ..... 90@90&10%
Patent ..... 90@90&5%
Coil: ⅞ 1 1⅛ 1¼ Inch.
11¢. 12¢. 13¢. 15¢. per box

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers... $5.90 5.00 3.70 3.50 3.30
The above prices are based on $5.50 off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots..... per lb. 1¾@2¢

Wedges—

Oil Finish..... lb.. .@3¢

Weights—Hitching—

Covert Mfg. Co..... 30&2%

Sash—

Per ton, f.o.b. factory:
Eastern District..... $30.00
Southern Territory. $24.00@25.00
Western and Central Districts ..... $25.00@28.50

Wheels, Well—

8-in., $2.22; 10-in., $2.82; 12-in., $3.36; 14-in., $4.80.

Wire and Wire Goods—

Bright and Annealed:
6 to 9..... 72&10&7½%
10 to 18..... 72½&10&10%
19 to 26..... 75&10&10&2½%
27 to 36..... 77½&7½%
Galvanized:
6 to 9..... 72½&10%
10 to 14..... 72½&10&5%
15 to 16..... 72½&10&5%
17 to 18..... 72½%
19 to 26..... 70&5&2½%
27 to 36..... 65&10&10%
Coppered:
6 to 9..... 65&10&10%
10 to 14..... 70&10&5%
15 to 18..... 65&10&10&10%
19 to 26..... 70&5&2½%
27 to 36..... 72½&10&2½%
Tinned:
6 to 18..... 67&10&10%
Brass ..... 17¼¢ lb., base
Copper ..... 32¢ lb., base
Cast Steel Wire..... 50%

Spooled Wire—

Annealed and Tinned.... 70&10%
Brass and Copper..... 60&10%
Retailers' Assortments, per box, $2.10@$2.40
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Steel Wire Goods..... 90&15%
Brass Wire Goods.... 90@90&10%
Brass Cup and Shoulder Hooks, 80&15%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&5@80&10%
Painted Screen Cloth, 100 ft., $1.30
Standard Galv. Hardware Grade: Per 100 sq. ft.
Nos 2, 2½ & 3 Mesh..... $2.50
Nos. 4 and 5 Mesh..... $2.75
No. 6 Mesh..... $3.00
No. 8 Mesh..... $3.50

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural ..... 75@75&10%
Alligator or Crocodile.. 70&10@75%
Baxter Pattern S Wrenches... 70&5@70&10%
Drop Forged S..... 45@45&5%
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut..... 50%
Combination Black..... 40&5%
Merrick Pattern..... 50%
Boardman's 40%
Coes' Genuine Knife Hdl..40&10&5&5%
Coes' Genuine Steel Hdl..40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes', Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle 70%
Gem Pocket..... 30%
Hercules 70%
W. & B. Machinist:
Case lots..... 50&5%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W., 50&10%; full cases..... 50&10&5%
Stillson 65%
Uwanta Wrench Co.:
Railroad Special, Iron Handle, 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%

Wrought Goods—

Staples, Hooks, &c., list March 17, '02..... 90%

Zinc— *(Cask lots at mill.)*

Sheet..... per 100 lb., $7.00

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:	
1 to 1½ in. round and square	₱ lb 2.10¢
1½ to 4 in. x ⅜ to 1 in.	₱ lb 2.10¢
1½ to 4 in. x ¼ to 5-16	₱ lb 2.30¢
Rods—¼ and 11-16 round and square	₱ lb 2.30¢
Angles:	Cts ₱ lb
3 in. x ¼ in. and larger (except 3½ in. and 4 x ¼ 2.50¢)	2.40¢
3 in. x 3-16 in. and ⅛ in.	2.65¢
1½ to 2½ in. x ⅛ in.	2.45¢
1½ to 2¾ in. x 3-16 in. and thicker	2.40¢
1 to 1¼ in. x 3-16 in.	2.45¢
1 to 1¼ x ⅛ in.	2.50¢
⅞ x ⅛ in.	2.65¢
¾ x ⅛ in.	2.75¢
⅝ x ⅛ in.	3.80¢
½ x 3-32 in.	4.30¢
Tees:	
1 in.	2.75¢
1¼ in.	2.55¢
1½ to 2½ in.	2.45¢
3 in. and larger	2.50¢
Beams	2.40¢
Channels, 3 in. and larger	2.40¢
Bands—1½ to 6 x 3-16 to No. 8	2.45¢
"Burden's Best" Iron, base price	3.30¢
Burden's "H. B. & S." Iron, base price	3.10¢
"Ulster"	3.10¢
Norway Bars	3.60¢
Norway Shapes	3.80¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	2.10¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

Black

	One Pass, C.R. Soft Steel.	R. G. Cleaned.
No. 14	₱ lb 2.95	3.10¢
Nos. 18 to 21	₱ lb 3.15	3.10¢
No. 27	₱ lb 3.20	3.50¢
No. 28	₱ lb 3.30	3.60¢

Russia, Planished, &c.

Genuine Russia, according to assortment, W. Deweeswood	₱ lb 11½@14½¢
Patent Planished	₱ lb A, 10¢; B, 9¢, net.

Galvanized.

Nos. 14 to 16	₱ lb, 3.35¢
Nos. 22 to 24	₱ lb, 3.75¢
No. 27	₱ lb, 4.20¢
No. 28	₱ lb, 4.45¢

No. 20 and lighter 36 inches wide, 25¢ higher.

Tin Plates—

American Charcoal Plates (per box.)

A.A.A. Charcoal:	
IC, 14 x 20	$6.60
IX, 14 x 20	7.85
A. Charcoal:	
IC, 14 x 20	$5.65
IX, 14 x 20	6.75

American Coke Plates—Bessemer-

IC, 14 x 20 ..... 108 lb	$4.65
IX, 14 x 20	5.65

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating	$9.00
IX, 20 x 28 with an 8 lb. coating	11.00

Seamless Brass Tubes—

List December 4, 1905. Base price 20 ¢

Brass Tubes, Iron Pipe Sizes—

List December 4, 1905. Base price 20¢

Copper Tubes—

List December 4, 1905. Base price 23¢

Brazed Brass Tubes—

List June 6, 1898. 22½¢ ₱ lb

High Brass Rods—

16½¢ ₱ lb

Roll and Sheet Brass—

List June 6, 1898. 16½¢ ₱ lb

METALS—

Tin—

Straits Pig ₱ lb 33 @34 ¢

Copper—

Lake Ingot	₱ lb 15½@16 ¢
Electrolytic	₱ lb 15 @15½¢
Casting	₱ lb 14½@15 ¢
Sheet Copper Hot Rolled, 16 oz	₱ lb 19@..¢
" " 14 "	" " 20@..¢

Sheet Copper Cold Rolled, 1¢ ₱ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.

Bottoms, Pits and Flats	₱ lb 23¢ basis

Planished Copper, 1¢ ₱ lb more than Polished.

Spelter—

Western ₱ lb 6 @6¼¢

Zinc.

No. 9, base, casks, ₱ lb 7.50¢ | Open ₱ lb 8.00¢

Lead.

American Pig	₱ lb 5 @5¼¢
Bar	₱ lb 6 @6¼¢

Solder.

½ & ½, guaranteed	₱ lb 22½@23½¢
No. 1	₱ lb 20½@21¼¢
Refined	₱ lb 18½@18¾¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₱ lb ..@13¢
Halletts	@12¢
Other Brands	@11¢

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:

Small lots	nominal
100-lb lots	nominal

Old Metals.

Dealers' Purchasing Prices Paid in New York

	Cents
Copper, Heavy and Wire	₱ lb 11.00@11.25¢
Copper, Light and Bottoms	₱ lb 10.00@10.50¢
Brass, Heavy	₱ lb 8.00@ 8.50¢
Heavy Machine Composition	₱ lb 10.50@11.00¢
Clean Brass Turnings	₱ lb 6.50@ 7.00¢
Composition Turnings	₱ lb 8.00@ 9.00¢
Lead, Heavy	₱ lb ....@ 8.75¢
Tea Lead	₱ lb ....@ 8.50¢
Zinc Scrap	₱ lb ..@ 3.62½¢
No. 1 Yard Wrought, Long	$ 9.00@ 9.50
No. 1 Yard Wrought, Short	$ 8.50@ 9.00
Wrought Pipe	$ 7.25@ 8.00
No. 1 Machinery Cast	$12.50@13.00
Stove Plate	$11.00@11.50

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

ISSUED EVERY THURSDAY MORNING.

Subscription, postpaid, $5.00 a year.

TWO DOLLAR EDITION, $2.00 a year; DOLLAR EDITION, $1.00 a year, to the United States, Mexico, Hawaii, Cuba, Philippine Islands. OTHER COUNTRIES: Weekly Edition, $7.50; Semi-monthly Edition, $4.00; Monthly Edition, $2.50.

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